

OAKLAND UNIVERSITY

Volume 3

**School of Health Sciences (SHS)
School of Business Administration (SBA)
School of Education and Human Services (SEHS)
School of Engineering and Computer Science (SECS)
School of Nursing (SON)
Bachelor of Integrative Studies (BIS)
General Education Requirements**

2024-2025 UNDERGRADUATE CATALOG

2024 Volume MMXXIV
Published by Oakland University, Rochester, Michigan

All data in this catalog reflect information as it was available at the publication date. Oakland University reserves the right to revise all announcements contained in this publication at its discretion and to make reasonable changes in requirements to improve or upgrade academic and non-academic programs.

The academic requirements described in this catalog are in effect fall semester 2024 through summer semester 2031. Undergraduate students admitted to a degree-granting program may use provisions in this catalog to meet requirements within that time frame.

School of Health Sciences

School of Health Sciences Website

The School of Health Sciences provides an exceptional environment of collaborative, academic and clinical learning that helps transform students into leaders impacting the health needs of our communities in diverse wellness and health-related practices.

The School of Health Sciences is passionate about providing students with the best science-based health education, high-quality academic preparation, interdisciplinary teaching and excellence in instruction in the classroom and clinical laboratory.

School Honors

Honors are awarded to School of Health Sciences graduating students who have earned a GPA of 3.50 or above in courses completed in the School.

Admission Requirements

Our programs with additional admissions requirements may be considered on a competitive basis if the balance between applicants and available instructional resources requires such action to maintain the academic integrity of the program.

Bachelor of Science

Applied Health Sciences, B.S.

Department Website

The Applied Health Sciences (AHS) program is designed to allow students to obtain a Bachelor of Science degree by combining courses from the university curriculum with specific Associate of Applied Sciences (AAS) degrees from accredited community colleges.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Applied Health Sciences, B.S.

1. Have already completed the course requirements for and earned the Associate of Applied Science degree in a health-related field from an accredited community college or other institution of higher education:

Students who hold an AAS degree in another field must seek permission to enroll from the Applied Health Sciences Program Coordinator.

2. Provide appropriate documentation of the AAS degree:

Submit official transcripts showing AAS degree and all coursework completed with a minimum 2.0 GPA. Concurrent enrollment in a community college AAS program and Oakland University's AHS program is **not** permitted.

3. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

4. Complete the following core courses:

- AHS 3320 - Delivering Safe Patient Care **(4)** (not required for Radiologic Technology Leadership or Orthotics & Prosthetics Assistant Studies Specializations)
- AHS 3340 - Hospital Safety and Health **(4)** (not required for Radiologic Technology Leadership or Orthotics & Prosthetics Assistant Studies Specializations)
- HS 2000 - Introduction to Health and Health Behaviors **(3)** and HS 2050 - Introduction to Health and Health Behaviors Learning Lab **(1)** * (not required for Radiologic Technology Leadership Specialization)
- HS 4500 - Ethics in Health Care **(4)** *
- PH 3000 - Introduction to Public Health **(3)** * (or WHP 3700 for Radiologic Technology Leadership Specialization and Orthotics and Prosthetics Assistant Studies Specialization ONLY)

*Courses that also satisfy the university general education requirement

5. Select and complete the course requirements specified under one of the following concentrations or specializations:

- Applied Health Sciences, B.S., Concentration in Health Care Leadership
- Applied Health Sciences, B.S., Concentration in Health Promotion
- Applied Health Sciences, B.S., Specialization in Orthotics and Prosthetics Assistant Studies
- Applied Health Sciences, B.S., Specialization in Radiologic Technology Leadership

* Number of elective credits required for the concentration(s) varies based on courses completed and are selected with assistance from your academic adviser, based on your career goals, from an approved list of courses. Students must achieve a minimum of 120 credits with a minimum of 32 upper level (3000-4000) credits and satisfy all University degree requirements to graduate.

Applied Health Sciences, B.S., Concentration in Health Care Leadership

Department Website

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the Applied Health Sciences, B.S., Concentration in Health Care Leadership

Number of elective credits required for the concentration varies based on courses completed and are selected with assistance from your academic adviser, based on your career goals, from an approved list of courses. Students must achieve a minimum of 120 credits with a minimum of 32 upper level (3000-4000) credits and satisfy all University degree requirements to graduate.

Students pursuing the health care leadership concentration must complete the degree requirements for the major in Applied Health Sciences, B.S. and take a minimum of 20 credits of electives from the following:

- HRD 3100 - Introduction to Human Resource Development **(4)**
- HRD 3210 - Group/Team Development and Leadership **(4)**
- HRD 3230 - Fundamentals of Human Interaction **(4)**
- HRD 3510 - Principles of Leadership **(4)**
- HRD 3600 - Lean Principles and Practices in Organizations **(4)**
- PH 3800 - Persuasion and Marketing in Health Promotion **(4)**
- WHP 3600 - Wellness Facilitation **(4)**

Applied Health Sciences, B.S., Concentration in Health Promotion

Department Website

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the Applied Health Sciences, B.S., Concentration in Health Promotion

Number of elective credits required for the concentration varies based on courses completed and are selected with assistance from your academic adviser, based on your career goals, from an approved list of courses. Students must achieve a minimum of 120 credits with a minimum of 32 upper level (3000-4000) credits and satisfy all University degree requirements to graduate.

Students pursuing the health promotion concentration must complete the degree requirements for the major in Applied Health Sciences, B.S. and take a minimum of 20 credits of electives from the following:

- AHS 3310 - Health Care Safety **(4)**
- CDS 2010 - Careers in Clinical and Diagnostic Sciences **(1)**
- CDS 2070 - Health Care Systems Around the World **(3)**
- CDS 2100 - Medical Terminology **(1)**
- CDS 2250 - Clinical Laboratory Theory and Techniques **(2)**
- CDS 3300 - Microbiology of Infectious Diseases **(3)**
- CDS 3310 - Microbiology of Infectious Diseases Laboratory **(1)**
- CDS 4000 - Medical Genetics **(4)**
- CDS 4010 - Human Pathology **(4)**
- CDS 4020 - Molecular Diagnostics **(3)**
- CDS 4140 - Hematology/Hemostasis I **(3)**
- CDS 4150 - Hematology/Hemostasis Laboratory I **(1)**
- CDS 4160 - Hematology/Hemostasis II **(4)**
- CDS 4170 - Hematology/Hemostasis Laboratory II **(1)**
- CDS 4230 - Medical Immunology **(3)**
- CDS 4240 - Immunohematology **(3)**
- CDS 4241 - Immunohematology Laboratory **(1)**
- CDS 4250 - Medical Biochemistry **(4)**
- CDS 4270 - Clinical Chemistry **(4)**
- CDS 4280 - Clinical Chemistry Laboratory **(1)**
- CDS 4300 - Clinical Microbiology **(4)**
- CDS 4350 - Clinical Parasitology, Mycology, Virology **(3)**
- CDS 4360 - Clinical Parasitology, Mycology, Virology Lab **(1)**
- CDS 4400 - Clinical Correlations **(3)**

- CDS 4900 - Special Topics **(1 TO 4)**
- CHM 1440 - General Chemistry I **(4)*** and CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1450 - General Chemistry II **(4)** and CHM 1480 - General Chemistry Laboratory II **(1)**
- CHM 2340 - Organic Chemistry I **(4)**
- EHS 2250 - Environmental Health and Safety Training Methods **(3)**
- EHS 2350 - Occupational Safety and Health Standards **(3)**
- EHS 2450 - Professional Practice and Leadership Development **(3)**
- EHS 3300 - Safety and Health Administration and Programs **(3)**
- EHS 3330 - Fire Prevention and Protection **(3)**
- EHS 3380 - Environmental Health and Safety Engineering and Technology **(3)**
- EHS 3420 - Advanced Quantitative Methods for Environmental Health and Safety **(4)**
- EHS 4100 - Fundamentals of Occupational Hygiene **(3)**
- EHS 4200 - Applied Environmental and Occupational Hygiene **(4)**
- EHS 4230 - Radiation Safety **(3)**
- EHS 4340 - Ventilation and Emerging Technologies **(4)**
- EHS 4350 - Radiation Exposure Control **(2)**
- EHS 4410 - Accident/Incident Investigation and Analysis **(3)**
- EHS 4420 - Construction Safety **(3)**
- EHS 4430 - Robotic and Automation System Safety Analysis **(3)**
- EHS 4440 - Environmental Standards **(3)**
- EHS 4450 - Ergonomics **(3)**
- EHS 4460 - Industrial and Environmental Toxicology **(3)**
- EHS 4500 - Medical Geology (Geo-Medicine) **(4)**
- EXS 2200 - Introduction to Exercise Science **(2)**
- EXS 2700 - Safety and First Aid in Exercise Settings **(2)**
- EXS 3010 - Exercise Physiology **(3)**
- EXS 3015 - Exercise Physiology Laboratory **(1)**
- EXS 3020 - Biomechanics **(3)**
- HS 2150 - Stress Management **(3)**
- HS 3250 - Research Methods in Health Sciences **(3)**
- HS 3400 - Contemporary Topics in Health **(3)**
- HS 3410 - Integrative Holistic Health **(3)**
- HS 3430 - Sociology of Health and Medicine **(4)**
- HS 3440 - Introduction to Community Engagement **(4)**
- HS 3450 - Leadership and Healthcare **(4)**
- HS 3460 - Community Engaged Research Experience **(4)**
- HS 3500 - Health Behavior Theories **(3)**
- HS 4430 - Modalities for Healing **(3)**
- HS 4440 - Healing Traditions **(3)**
- HS 4450 - Laughter as Therapeutic Modality **(3)**
- HS 4460 - Mindfulness **(3)**
- HS 4550 - Qualitative Research Methods **(4)**
- HS 4900 - Special Topics **(2 TO 4)**
- HS 4995 - Directed Study **(1 TO 4)**
- NTR 2500 - Human Nutrition and Health **(3)**
- NTR 2650 - Nutrition Assessment Methods **(3)**
- NTR 2651 - Nutrition Assessment Methods Laboratory **(1)**

- NTR 2700 - Introduction to Food Science (3)
- NTR 2750 - Introduction to Cooking and Culinary Science (2)
- NTR 3120 - Community Nutrition (3)
- NTR 3140 - Food, Nutrition, and Culture (3)
- NTR 3200 - Nutrition and Physical Activity (2)
- NTR 3210 - Herbs Supplements & Nutrition (3)
- NTR 3220 - Eating Disorders (3)
- NTR 3230 - Foodborne Illnesses (2)
- NTR 3260 - Food Politics (3)
- NTR 4100 - Nutrition and Lifecycles (4)
- NTR 4200 - Communication and Counseling in Nutrition Practice (4)
- NTR 4300 - Food Service Management (4)
- NTR 4350 - Nutrient Metabolism (4)
- PH 3350 - Principles of Environmental Health Sciences (4)
- PH 3500 - Public Health Program Implementation (4)
- PH 3800 - Persuasion and Marketing in Health Promotion (4)
- PH 4650 - Social Determinants of Health (4)
- PH 4750 - Global Health and Social Issues (4)
- PHY 1010 - General Physics I (4)* and PHY 1100 - General Physics Lab I (1)
- PHY 1020 - General Physics II (4)* and PHY 1110 - General Physics Lab II (1)
- WHP 3600 - Wellness Facilitation (4)
- WHP 3700 - Culture, Ethnicity and Well-being (3)
- WHP 4000 - Assessment and Interventions in Wellness (4)
- WHP 4030 - Laboratory in Assessment and Interventions (4)
- WHP 4350 - Environmental Justice (4)
- WHP 4900 - Special Topics (1 TO 4)

Applied Health Sciences, B.S., Specialization in Orthotics and Prosthetics Assistant Studies

Department Website

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Applied Health Sciences, B.S., Specialization in Orthotics and Prosthetics Assistant Studies

1. Have earned the Orthotist/Prosthetist Technician Associate degree from an accredited institution of higher education with a minimum 2.0 GPA:

Concurrent enrollment in a community college AAS program and Oakland University's AHS program is not permitted. Students who hold an AAS degree in any other medical or health-related field not listed above may seek permission to enroll from the Applied Health Sciences Program Coordinator.

2. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity and Capstone. For details, refer to the General Education Requirements section of the catalog.

3. Complete core courses for the major in Applied Health Sciences, B.S.

Students pursuing the orthotics and prosthetics assistant studies specialization must complete the degree requirements for the major in Applied Health Sciences, B.S.

4. Complete the following required courses:

- CDS 2100 - Medical Terminology (1)
- EXS 3510 - Clinical Assessments (3)
- EXS 3520 - Material Characteristics (2)
- EXS 3535 - Patient & Practice Management (1)
- EXS 3540 - Fit, Function and Modifications (3)
- EXS 3550 - Neuropathic Disorders (1)
- EXS 4510 - Spinal Orthotics (2)
- EXS 4520 - Upper Extremity Orthotics (2)
- EXS 4530 - Lower Extremity Orthotics (3)
- EXS 4540 - Upper Extremity Prosthetics (2)
- EXS 4550 - Lower Extremity Prosthetics (3)
- HS 3250 - Research Methods in Health Sciences (3)

Additional Information

If students need additional credits to obtain the required 120 credits for graduation, they can choose elective courses from either the Health Promotion or Health Care Leadership concentrations in AHS.

* Students who are completing this specialization will not be eligible for the orthotics and prosthetics certification exam or patient contact.

Applied Health Sciences, B.S., Specialization in Radiologic Technology Leadership

Department Website

A Radiologic (X-ray) Technologist is a professional responsible for the administration of ionizing radiation for diagnostic or research purposes. The radiologic technologist must integrate complex knowledge and advanced technical skills in the imaging of internal structures. Radiologic technologists apply knowledge of anatomy, physiology, positioning and radiographic technique in the performance of their duties.

This degree is designed to allow the radiologic technology professional to transfer their current degree and professional credentials to the university in order to complete a higher degree. This degree is appropriate for American Registry of Radiologic

Technologists (ARRT) registered radiologic technologists who have already completed an associate's degree and would like to advance their education by completing a bachelor's degree.

Specific offerings for each semester may be found in the Schedule of Classes.

Admission

1. To be admitted to the Applied Health Sciences, B.S., Specialization in Radiologic Technology Leadership the student must:
2. Complete the Oakland University application process. Students admitted to OU SHS with an Associate's Degree from an accredited community college, may transfer a maximum of 88 credits. Completion of General Education Requirements through the Michigan Transfer Agreement or Out of State Transfer Policy or at Oakland University.

Additional 28 Prior Learning credits

Oakland University awards an additional 28 prior learning credits for successful completion of the ARRT (American Registry of Radiologic Technologists)

Grade point policy

Students in the radiologic technology leadership specialization whose cumulative grade point average falls below a 2.80 are not able to graduate with the professional specialization designation.

In order to remove program probationary status, students must raise their cumulative major grade point average to 2.80 or higher.

Academic Advising

All students are required to meet with their professional academic advisor in the School of Health Sciences at least once a year to review progress toward their degree.

Radiologic technology leadership specialization professional course requirements

Students pursuing the radiologic technology leadership specialization must complete the degree requirements for the major in Applied Health Sciences, B.S. , and take the following courses for the specialization:

- HS 3250 - Research Methods in Health Sciences (3)
- HS 3450 - Leadership and Healthcare (4)

And a minimum of 18 elective credits from the following courses:

- AHS 3320 - Delivering Safe Patient Care (4)
- AHS 3340 - Hospital Safety and Health (4)
- COM 3402 - Communication in Leadership (4)
- HRD 3100 - Introduction to Human Resource Development (4)
- HRD 3210 - Group/Team Development and Leadership (4)
- HRD 3230 - Fundamentals of Human Interaction (4)

- HRD 3430 - Talent Acquisition and Performance Management (4)
- HRD 3600 - Lean Principles and Practices in Organizations (4)
- HRD 4200 - Organizational Analysis and Culture (4)
- HS 3500 - Health Behavior Theories (3)
- HS 4460 - Mindfulness (3)
- MGT 3000 - Survey of Management (3)
- RAD 4801 - Computed Tomography (6) *
- RAD 4803 - Magnetic Resonance Imaging (7) *
- RAD 4804 - Mammography (6) *

Or any other course approved by the program director in writing through the approved petition of exception form

*Advanced Modalities for Radiologic Technologists

Professionals who are currently American Registry of Radiologic Technologists (ARRT) registered may expand on their existing knowledge in the areas of Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and Mammography, in affiliation with Beaumont Health. Each course is approximately one semester (15 - 17 weeks) in length and includes three to four days of clinical and one three-hour class day per week. Clinical hours take place on days and afternoon shifts at various Beaumont Health locations. Other clinical sites, locations and hours of attendance may be required. Clinical shifts vary based on the clinical rotation schedule, as assigned. With permission, additional clinical time may be allowed. Didactic coursework may be offered online. These advanced modality courses demand a high level of student professionalism, personal commitment, and academic focus.

Students may apply for admission to one of the modality courses listed above (*), through the Radiologic Technology program application process. Applicants are required to hold current ARRT registration or become registered with the ARRT within two weeks after the modality course start date and they must also hold current CPR ("Healthcare Provider") certification through the American Heart Association. Applications are accepted year round and the courses may be scheduled any semester based on the number of applicants. Acceptance into a modality course is based on previous math and science grade point average, personal interview, and letters of recommendation.

Clinical and Diagnostic Sciences, B.S.

Department Website

e provides an experiential human-based education in biomedical, imaging, and clinical sciences, and is built upon the foundations of biology and chemistry. The Bachelor of Science in Clinical and Diagnostic Sciences degree program offers specializations in Diagnostic Medical Sonography, Medical Laboratory Science, Histotechnology, Radiologic Technology, Nuclear Medicine Technology, Pre-clinical Professions, Pre-pharmacy Sciences, and Pre-Physician Assistant. Using clinical perspectives to develop critical thinking, teamwork, and communication skills, students are prepared for a variety of health careers or the pursuit of advanced graduate education (MD, DO, PA, PharmD, DDS, DVM, etc.).

Students pursuing a Clinical and Diagnostic Sciences (CDS) degree are required to complete a minimum of 120 credits and fulfill the requirements described below.

Requirements for clinical and diagnostic sciences, B.S.

1. General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

2. Complete the CDS core curriculum

- BIO 1200 - Biology I **(4)**
- BIO 2100 - Human Anatomy **(4)**
- BIO 2101 - Human Anatomy Laboratory **(1)**
- BIO 2600 - Human Physiology **(4)**
- CDS 2010 - Careers in Clinical and Diagnostic Sciences **(1)**
- CDS 2070 - Health Care Systems Around the World **(3)**
- CDS 2100 - Medical Terminology **(1)**
- CDS 2250 - Clinical Laboratory Theory and Techniques **(2)** (not required for Pre-Physician Assistant, RAD, NMT or DMS specialization)
- HS 4500 - Ethics in Health Care **(4)**
- STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** **or** STA 2222 - Statistical Methods for Biology **(4)** **or** STA 2226 - Applied Probability and Statistics **(4)**

3. Complete the specialization course requirements specified under one of the following specializations:

- Clinical and Diagnostic Sciences, B.S., Specialization in Diagnostic Medical Sonography
- Clinical and Diagnostic Sciences, B.S., Specialization in Histotechnology
- Clinical and Diagnostic Sciences, B.S., Specialization in Medical Laboratory Science (MLS)
- Clinical and Diagnostic Sciences, B.S., Specialization in Nuclear Medicine Technology
- Clinical and Diagnostic Sciences, B.S., Specialization in Radiologic Technology
- Clinical and Diagnostic Sciences, B.S., Specialization in Pre-clinical professions for medicine, dentistry, optometry, and veterinary medicine
- Clinical and Diagnostic Sciences, B.S., Specialization in Pre-Physician Assistant
- Clinical and Diagnostic Sciences, B.S., Specialization in Pre-Pharmacy

4. Complete all CDS major program course-work with a cumulative GPA of 2.80 or higher

Clinical and Diagnostic Sciences, B.S., Specialization in Diagnostic Medical Sonography

Department Website

A sonographer works under the guidance of radiologists in a variety of health-care settings and must use advanced critical thinking skills to help assess function and determine the presence of disease processes in the human body.

A sonographer is required to operate a variety of complex ultrasound equipment as well as numerous ancillary devices in order to perform sonographic procedures. Sonographers must integrate complex knowledge and advanced technical skills in the imaging of internal structures and they must apply knowledge of advanced anatomy and physiology in the performance of their duties. Individuals interested in this career must be able to communicate effectively with patients and other health-care professionals.

The sonographer must display compassion, competence and concern in order to meet the special needs of the patient. Direct patient contact is required while performing this job.

Admission to clinical specialization internship

To be accepted into a diagnostic medical sonography (DMS) affiliate program, students must submit a formal application for each program for which they seek consideration.

This degree is affiliated with the Henry Ford Health System DMS Program and Ascension Providence Hospital, Southfield Campus, DMS Program. In addition to submitting a formal application, students may also be required to interview, acquire and maintain CPR certification for Health Care Providers, job shadow in sonography, obtain clinical medical experience, and/or take an admissions exam. Students must have a minimum of a 2.8 overall GPA to be considered for acceptance, however it is recommended that students have at least a 3.0 overall GPA.

Acceptance into a DMS program is competitive and not guaranteed. Acceptance is determined by each DMS program affiliate and is based on prerequisite course-work GPA, specific course grades, interview, previous work experience, letters of recommendation, and documentation of required patient care and shadowing experience. Students who are accepted to an accredited DMS program will receive all academic and clinical education from instructors employed by that program. Grades while attending the DMS hospital will be reported to Oakland for their OU transcript pass/fail, however letter grades will be utilized on the program transcript. Students should check the clinical affiliate program's websites for exact application dates, prerequisite requirements, and grade requirements.

Clinical Rotations

Clinical rotations will be determined by their affiliated hospitals and clinics. Students will be awarded the degree upon successful completion of all university and hospital affiliate program graduation requirements. Grades while attending the DMS hospital programs will be reported to Oakland for their transcript as pass/fail, however letter grades will be utilized on the program transcript.

Other Program Affiliate Requirements

Upon acceptance into a clinical affiliate program, all students must pass a mandatory background check and health screening. In order to protect patients and provide a safe environment for students, staff, and the public, all students are required to have up-to-date immunizations, including the seasonal flu vaccine and the COVID-19 vaccine. If an applicant fails to comply with the immunization policy, fails the mandatory health screen and/or background check, the applicant's acceptance into the program will be rescinded. Vaccine exemption forms may be considered, but it will be determined by the program affiliate. Students are required to obtain and maintain their own medical insurance coverage for the duration of the DMS program.

Grade point policy

Students in the DMS professional specialization whose cumulative grade point average falls below a 2.80, or those who do not meet the affiliate DMS program grade requirements, are not able to graduate with the professional specialization designation. In these cases, students are eligible to graduate with a Clinical and Diagnostic Sciences Pre-clinical professions specialization.

Academic Advising

All students are required to meet with their professional academic advisor in the School of Health Sciences at least once a year to review progress toward their degree.

Diagnostic medical sonography specialization professional course requirements

Students pursuing the diagnostic medical sonography specialization must complete the degree requirements for the major in Clinical and Diagnostic Sciences, B.S. and take the following courses for the specialization:

- BIO 4100 - Advanced Visceral Human Anatomy (4)
- CDS 4010 - Human Pathology (4)
- PHY 1010 - General Physics I (4)
- PHY 1020 - General Physics II (4)
- WRT 1060 - Composition II (4)

Degree completion at Henry Ford Health System

To be awarded the specialization in diagnostic medical sonography at Henry Ford Health System, students must complete the following courses:

Henry Ford - September start with August graduation (24-month program - 60 credits)

- DMS 3110 - HF Diagnostic Medical Sonography 1 (12)
- DMS 3120 - HF Diagnostic Medical Sonography 2 (12)
- DMS 3130 - HF Diagnostic Medical Sonography 3 (6)
- DMS 4110 - HF Diagnostic Medical Sonography 4 (12)
- DMS 4120 - HF Diagnostic Medical Sonography 5 (12)
- DMS 4130 - HF Diagnostic Medical Sonography 6 (6)

Degree completion at the Ascension Providence Hospital

To be awarded the specialization diagnostic medical sonography at Ascension Providence Hospital, students must complete the following courses:

Ascension - January start with October graduation (21-month program - 60 credits)

- DMS 3210 - ASC Diagnostic Medical Sonography 1 (12)
- DMS 3220 - ASC Diagnostic Medical Sonography 2 (6)
- DMS 3230 - ASC Diagnostic Medical Sonography 3 (12)
- DMS 4210 - ASC Diagnostic Medical Sonography 4 (12)
- DMS 4220 - ASC Diagnostic Medical Sonography 5 (6)
- DMS 4230 - ASC Diagnostic Medical Sonography 6 (12)

Clinical and Diagnostic Sciences, B.S., Specialization in Histotechnology

Department Website

Histotechnologists perform a variety of diagnostic and research procedures in the anatomic sciences. During the clinical internship, students learn histological techniques that involve processing, sectioning and staining of tissue specimens that have been removed from humans or animals by biopsy, surgical procedures or autopsy. Advanced techniques include muscle enzyme histochemistry, electron microscopy, immunofluorescence and immunoenzyme procedures, molecular pathology techniques including hybridization and image analysis, and medical photography. Students may apply for specialization standing in histotechnology after completing the CDS core curriculum and acceptance to a hospital internship. Application to the hospital-based internship is typically made during the winter semester of the sophomore year. The junior year consists of the prescribed professional course requirements at Oakland University. The senior year consists of a 12-month internship at the Beaumont Health School of Histotechnology. Acceptance into the internship program is competitive and based on grade point average, personal interview and letters of recommendation.

Admission to clinical specialization internship

To be accepted in a clinical specialization internship, students must submit a formal application for each program for which they seek consideration. Applications for the histotechnology internship program are processed in the winter semester of the sophomore year (or winter semester following completion of the Clinical and Diagnostic Sciences core curriculum). It is recommended that students have at least a 3.00 overall GPA. Students with lower grade point averages may be admitted provisionally pending satisfactory completion of appropriate fall semester, junior-year course work. Students should check the clinical program's website for exact application dates.

Grade point policy

Students in the Histotechnology professional specialization whose cumulative grade point average falls below a 2.80 are not able to graduate with the professional specialization designation. In these cases, students are eligible to graduate with a Clinical and Diagnostic Sciences Pre-clinical professions specialization.

In order to remove program probationary status, students must raise their cumulative major grade point average to 2.80 or higher.

Academic Advising

All students are required to meet with their professional academic advisor in the School of Health Sciences at least once a year to review progress toward their degree.

Histotechnology specialization professional course requirements

Students pursuing a specialization in histotechnology must complete the degree requirements for the major in Clinical and Diagnostic Sciences, B.S. and take the following courses for the specialization (a minimum of 120 credits required).

- BIO 3140 - Histology (4)
- BIO 3141 - Histology Laboratory (1)
- CDS 4000 - Medical Genetics (4)
- CDS 4010 - Human Pathology (4)

- CDS 4020 - Molecular Diagnostics (3)
- CDS 4140 - Hematology/Hemostasis I (3)
- CDS 4230 - Medical Immunology (3)
- CDS 4250 - Medical Biochemistry (4)
- CDS 4300 - Clinical Microbiology (4)
- CDS 4350 - Clinical Parasitology, Mycology, Virology (3)
- CHM 1440 - General Chemistry I (4)
- CHM 1450 - General Chemistry II (4)
- CHM 1470 - General Chemistry Laboratory I (1)
- CHM 1480 - General Chemistry Laboratory II (1)
- HT 4010 - Basic Histotechnique and Histochemical Staining Methods (12)
- HT 4020 - Basic Electron Microscopy (3)
- HT 4030 - Immunohisto-Cytochemistry (5)
- HT 4040 - Special Techniques (4)

Clinical and Diagnostic Sciences, B.S., Specialization in Medical Laboratory Science (MLS)

Department Website

Medical Laboratory Scientists perform diagnostic tests that provide important information to determine the presence, extent, or absence of disease as well as data to evaluate the effectiveness of treatment. They work with all types of body tissues and fluids, from blood and urine to cell samples. Major areas of specialization within the laboratory include hematology, clinical chemistry, microbiology, serology, urinalysis, immunohematology (blood bank) and molecular diagnostics.

Students may apply for specialization standing in MLS after completing the CDS core curriculum, generally at the end of the sophomore year. The junior and senior years consist of the prescribed professional course requirements at Oakland University. A clinical internship is required for national certification as a medical laboratory scientist (certification required for most hospital and private laboratory employment positions). Oakland University is affiliated with the following accredited MLS clinical programs: Detroit Medical Center University Laboratories; Ascension St. John Hospital; and Beaumont Health.

Admission to clinical specialization internship

To be accepted in a clinical specialization internship, students must submit a formal application for each program for which they seek consideration. Applications for the MLS internships are processed during the summer prior to the senior year. Internships are between six and ten months in length (depending on the clinical site), and are done post-graduate. It is recommended that students have at least a 3.00 overall GPA. Students with lower grade point averages may be admitted provisionally pending satisfactory completion of appropriate fall semester, junior-year course work. Students should check the clinical program's website for specific application dates. Acceptance into the internship program is competitive and based on grade point average, personal interview, and letters of recommendation.

Grade point policy

Students in the professional medical laboratory science specialization whose cumulative grade point average falls below a 2.80 are not able to graduate with the professional specialization designation. In these cases, students are eligible to graduate with a Clinical and Diagnostic Sciences Pre-clinical professions specialization.

In order to remove program probationary status, students must raise their cumulative major grade point average to 2.80 or higher.

Note

Some clinical programs may require MTH 1441. Check the individual clinical programs for current requirements.

Academic Advising

All students are required to meet with their professional academic advisor in the School of Health Sciences at least once a year to review progress toward their degree.

Medical laboratory science specialization professional course requirements

Students completing the Clinical and Diagnostic Sciences, B.S. with a specialization in Medical Laboratory Science must complete a minimum of 120 credits and satisfy all University degree requirements for the major in Clinical and Diagnostic Sciences and take the following courses:

- CDS 4000 - Medical Genetics **(4)**
- CDS 4020 - Molecular Diagnostics **(3)**
- CDS 4140 - Hematology/Hemostasis I **(3)**
- CDS 4150 - Hematology/Hemostasis Laboratory I **(1)**
- CDS 4160 - Hematology/Hemostasis II **(4)**
- CDS 4170 - Hematology/Hemostasis Laboratory II **(1)**
- CDS 4230 - Medical Immunology **(3)**
- CDS 4240 - Immunochemistry **(3)**
- CDS 4241 - Immunochemistry Laboratory **(1)**
- CDS 4250 - Medical Biochemistry **(4)**
- CDS 4270 - Clinical Chemistry **(4)**
- CDS 4280 - Clinical Chemistry Laboratory **(1)**
- CDS 4300 - Clinical Microbiology **(4)**
- CDS 4310 - Clinical Microbiology Laboratory **(1)**
- CDS 4350 - Clinical Parasitology, Mycology, Virology **(3)**
- CDS 4360 - Clinical Parasitology, Mycology, Virology Lab **(1)**
- CDS 4400 - Clinical Correlations **(3)**
- CHM 1440 - General Chemistry I **(4)**
- CHM 1450 - General Chemistry II **(4)**
- CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1480 - General Chemistry Laboratory II **(1)**
- CHM 2340 - Organic Chemistry I **(4)**
- PHY 1010 - General Physics I **(4)**
- PHY 1020 - General Physics II **(4)**
- **Two (2) credits of free electives can be used to satisfy the 120 degree credit requirement. Suggested elective course(s): HS 1000**

Note

Some clinical programs may require MTH 1441. Check the individual clinical programs for current requirements.

Clinical and Diagnostic Sciences, B.S., Specialization in Nuclear Medicine Technology

Department Website

Nuclear Medicine Technologists utilize small amounts of radioactive materials for diagnosis, therapy and research. Diagnosis can involve organ imaging using gamma counters to detect radioactive material administered to the patient or analysis of biologic specimens to detect levels of various substances. Therapeutic doses of radioactive materials are also given to patients to treat specific diseases.

Admission

The Nuclear Medicine Technology (NMT) specialization is available to School of Health Sciences students through a partnership between the Department of Clinical and Diagnostic Sciences, and the Nuclear Medicine Institute at the University of Findlay (Findlay, Ohio). Admission to the University of Findlay Nuclear Medicine Technology program is through a competitive admissions process. Once accepted, Oakland students will need to: 1) apply to be a guest student at the University of Findlay while they are in the Nuclear Medicine program; 2) send a letter of acceptance to their academic adviser; and 3) register for classes and pay tuition through the University of Findlay.

The Findlay program has two start dates per year, in August and January. Application for the clinical program is made during the junior year and should be made 9-12 months prior to the desired beginning class date (November 1st for an August start date or April 1st for the following January start date). The senior year of study consists of a 12-month program, one semester on the University of Findlay campus, and two semesters of full-time clinical education at a clinical affiliate. Currently available clinical affiliates in the Detroit metropolitan area include Children's Hospital of Michigan, Detroit; Harper Hospital, Detroit; University of Michigan Health System, Ann Arbor; and the Veterans Affairs Ann Arbor Healthcare System, Ann Arbor. The Findlay NMT program has over 60 clinical affiliates, in 10 states, so additional options are available if the student so desires. Upon completion of the NMT program at the University of Findlay, the student will receive their B.S. in Clinical and Diagnostic Sciences, Specialization in NMT, from Oakland University. Students are responsible for sending their final, official transcripts from Findlay University to the records office at Oakland University at the end of their final semester in order to confer the degree. Acceptance into the University of Findlay Nuclear Medicine Technology program is competitive and based on grade point average, personal interview and letters of recommendation.

Grade point policy

Students in the nuclear medicine technology specialization whose cumulative grade point average falls below a 2.80 are not able to graduate with the professional specialization designation. In these cases, students are eligible to graduate with a Clinical and Diagnostic Sciences Pre-clinical professions specialization.

In order to remove program probationary status, students must raise their cumulative major grade point average to 2.80 or higher.

Academic Advising

All students are required to meet with their professional academic advisor in the School of Health Sciences at least once a year to review progress toward their degree.

Nuclear Medicine Technology Specialization professional course requirements

Students pursuing a specialization in nuclear medicine technology must complete the degree requirements for the major in Clinical and Diagnostic Sciences, B.S. and take the following courses for the specialization (a minimum of 120 credits required).

- COM 2000 - Public Speaking (4)
- CDS 4010 - Human Pathology (4)
- CHM 1440 - General Chemistry I (4)
- CHM 1470 - General Chemistry Laboratory I (1)
- MTH 1441 - Precalculus (4)
- PHY 1010 - General Physics I (4)

Degree completion at the Nuclear Medicine Institute, University of Findlay, OH

To complete the nuclear medicine technology specialization, students must complete the following courses at the University of Findlay

- **NMED 406 Molecular Imaging Mathematics (3)**
- **NMED 416 Molecular Imaging Physics (2)**
- **NMED 425 Molecular Imaging Radiobiology (1)**
- **NMED 435 Molecular Imaging Radiation Protection (2)**
- **NMED 445 Molecular Non-Imaging Procedures (3)**
- **NMED 455 Molecular Imaging Procedures (5)**
- **NMED 462 Radionuclide Therapies (1)**
- **NMED 465 Radiochemistry and Radiopharmaceuticals (3)**
- **NMED 472 Molecular Imaging Instrumentation (3)**
- **NMED 475 Molecular Imaging Spect (1)**
- **NMED 477 Molecular Imaging Pet (1)**
- **NMED 485 Clinical Nuclear Medicine I (12)**
- **NMED 486 Clinical Nuclear Medicine II (12)**
- **NMED 487 Molecular Imaging Capstone (1)**

Clinical and Diagnostic Sciences, B.S., Specialization in Pre-clinical professions for medicine, dentistry, optometry, and veterinary medicine

Department Website

The Bachelor of Science degree in Clinical and Diagnostic Sciences (CDS) provides excellent preparation for admission to a variety of professional schools. For a student desiring greater flexibility in planning their academic program, the Pre-Professional Specialization professions specialization may be of interest. Students should consult with the CDS adviser as to the academic option most suitable for the individual student's academic career goals.

Academic Advising

All students are required to meet with their professional academic adviser in the School of Health Sciences at least once a year to review progress toward their degree.

Pre-Clinical Professions Specialization course requirements

Students pursuing a specialization in pre-clinical professions must complete the degree requirements for the major in Clinical and Diagnostic Sciences, B.S. and take the following courses for the specialization (a minimum of 120 credits required):

- PHY 1010 - General Physics I **(4)** and PHY 1100 - General Physics Lab I **(1)**
- PHY 1020 - General Physics II **(4)** and PHY 1110 - General Physics Lab II **(1)**
- CHM 1440 - General Chemistry I **(4)**
- CHM 1450 - General Chemistry II **(4)**
- CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1480 - General Chemistry Laboratory II **(1)**
- CHM 2340 - Organic Chemistry I **(4)**
- CHM 2350 - Organic Chemistry II **(4)**
- CHM 2370 - Organic Chemistry Laboratory **(2)**
- CDS 4000 - Medical Genetics **(4)**
- CDS 4050 - Pharmacology **(3)**
- CDS 4230 - Medical Immunology **(3)**
- CDS 4250 - Medical Biochemistry **(4)**
- CDS 4300 - Clinical Microbiology **(4)** or CDS 3300 - Microbiology of Infectious Diseases **(3)**
- CDS 4310 - Clinical Microbiology Laboratory **(1)** or CDS 3310 - Microbiology of Infectious Diseases Laboratory **(1)**

And a minimum of 15 elective credits from the following courses:

- BIO 1300 - Biology II **(4)**
- BIO 3620 - Medical Physiology **(4)**
- BIO 4100 - Advanced Visceral Human Anatomy **(4)**
- BIO 4112 - Advanced Musculoskeletal Human Anatomy **(4)**
- BIO 4620 - Advanced Human Physiology **(4)**
- CDS 4010 - Human Pathology **(4)**
- CDS 4020 - Molecular Diagnostics **(3)**
- CDS 4140 - Hematology/Hemostasis I **(3)**
- CDS 4150 - Hematology/Hemostasis Laboratory I **(1)**
- CDS 4160 - Hematology/Hemostasis II **(4)**
- CDS 4170 - Hematology/Hemostasis Laboratory II **(1)**
- CDS 4270 - Clinical Chemistry **(4)** and CDS 4280 - Clinical Chemistry Laboratory **(1)**
- CDS 4350 - Clinical Parasitology, Mycology, Virology **(3)** and CDS 4360 - Clinical Parasitology, Mycology, Virology Lab **(1)**
- CDS 4600 - Molecular Mechanisms of Bacterial Pathogenesis **(3)**
- CDS 4700 - Medical Endocrinology **(4)**
- CDS 4929 - Directed Readings **(1 TO 3)**
- CDS 4995 - Directed Research **(1 TO 4)**
- CDS 5030 - Histopathology **(4)**
- HS 1000 - Careers in Health **(1)**
- HS 3430 - Sociology of Health and Medicine **(4)**

- MTH 1441 - Precalculus (4)
- MTH 1554 - Calculus I (4)
- NTR 2500 - Human Nutrition and Health (3)
- NTR 4100 - Nutrition and Lifecycles (4)
- PH 3000 - Introduction to Public Health (3)
- PHL 3500 - Clinical Ethics (4)
- PSY 2250 - Introduction to Life-Span Developmental Psychology (4)
- PSY 2410 - Introduction to Clinical Psychology (4)
- PSY 2420 - Introduction to Abnormal Psychology (4)
- SOC 3430 - Sociology of Health and Medicine (4)
- WHP 3250 - Issues in Women's Health (4)
- WRT 1050 - Composition I (4)
- **or additional electives as approved. Some prerequisite courses may not count as electives, please consult with the professional academic adviser in the School of Health Sciences.**

Clinical and Diagnostic Sciences, B.S., Specialization in Pre-Pharmacy

Department Website

Within the Department of Clinical and Diagnostic Sciences, students may choose to pursue a Bachelor of Science in Clinical and Diagnostic Sciences degree with a specialization in Pre-pharmacy Sciences. This specialization prepares students to meet the academic prerequisites necessary to be considered for admission to Doctor of Pharmacy (PharmD) programs.

Through coursework, labs and experiential learning opportunities, students will develop skills to prepare and dispense prescriptions, ensure medicines and doses are correct, prevent harmful drug interactions, and counsel patients on the safe and appropriate use of their medications. Pharmacists are medication experts who enhance patient care and promote wellness.

Admission

Students pursuing a Bachelor of Science with a major in Clinical and Diagnostic Sciences (CDS) at Oakland University with a pre-pharmacy specialization may pursue admission to any accredited Doctor of Pharmacy program. Students admitted to an accredited PharmD program must complete their final year of undergraduate coursework at that program and credits earned from courses must be transferred back to Oakland University to complete the requirements for the Bachelor of Science with a major in CDS Clinical and Diagnostic Sciences. It is highly recommended that students consult with the academic adviser prior to enrolling in any of these classes, as completion of coursework does not guarantee admission or completion of the program. Admission to a PharmD program is through a competitive admissions process. Once accepted, Oakland University students will need to: 1) send a letter of acceptance to their academic adviser; and 2) register for classes and pay tuition through the PharmD school; and 3) send official transcripts after the first year (fall/winter semesters) of the PharmD program to Oakland University.

Students not accepted into a PharmD program may complete the degree program outlined below for a Bachelor of Science with a major in CDS Clinical and Diagnostic Sciences.

Academic Advising

All students are required to meet with their professional academic advisor in the School of Health Sciences at least once a year to review progress toward their degree.

Pre-Pharmacy specialization professional course requirements

Students pursuing the pre-pharmacy specialization must complete the degree requirements for the major in Clinical and Diagnostic Sciences, B.S. and take the following courses for the specialization (a minimum of 120 credits required):

- **CDS 3300 - Microbiology of Infectious Diseases (3)**
- **CDS 3310 - Microbiology of Infectious Diseases Laboratory (1)**
- **CDS 4000 - Medical Genetics (4)**
- **CDS 4050 - Pharmacology (3)**
- **CDS 4250 - Medical Biochemistry (4)**
- **CHM 1440 - General Chemistry I (4)**
- **CHM 1450 - General Chemistry II (4)**
- **CHM 1470 - General Chemistry Laboratory I (1)**
- **CHM 1480 - General Chemistry Laboratory II (1)**
- **CHM 2340 - Organic Chemistry I (4)**
- **CHM 2350 - Organic Chemistry II (4)**
- **CHM 2370 - Organic Chemistry Laboratory (2)**
- **MGT 1100 - Contemporary World Business (4)**
- **MTH 1554 - Calculus I (4)**
- **PHY 1010 - General Physics I (4)**
- **PHY 1100 - General Physics Lab I (1)**
- *and a minimum of 16 credits of CDS electives (approved non-CDS elective course: HS 1000)*

Specialization in Pre-Pharmacy (3+1) Manchester University

Students pursuing a Bachelor of Science with a major in Clinical and Diagnostic Sciences (CDS) at Oakland University with a pre-pharmacy specialization may pursue admission to the Doctor of Pharmacy (Pharm D) at Manchester University.

Manchester University will reserve two (2) seats in each annual cohort of students entering its Doctor of Pharmacy program for qualified students of Oakland University. These students would also qualify for a reserved seat in the Dual Degree PharmD/MS in Pharmacogenomics (PGX) cohort for that entry year. Qualified students must complete the application process for admission to the Manchester Pharmacy program according to the established deadlines.

Specialization in Pre-Pharmacy (3+1) Roosevelt University

Roosevelt University, located just outside of Chicago, has partnered with Oakland University to create an educational pathway for qualified students interested in becoming pharmacists. Beginning the fall of 2022, Oakland University students can complete three years in the School of Health Sciences and enter Roosevelt University's Doctor of Pharmacy program to simultaneously complete their Bachelor of Science at Oakland University and start a PharmD. Benefits of this program include:

- Direct application to Roosevelt University rather than through PharmCAS
- Upon completion of prerequisite coursework student will be eligible to apply for the program
- Waiver of PCAT requirements

The Roosevelt University affiliation is in addition to our previously established Manchester University Doctor of Pharmacy program.

Pre-Pharmacy (3+1) specialization professional course requirements

Students pursuing the pre-pharmacy (3+1) specialization must complete the degree requirements for the major in Clinical and Diagnostic Sciences, B.S. and take the following courses for the specialization (a minimum of 120 credits required):

- **CDS 3300 - Microbiology of Infectious Diseases (3)**
- **CDS 3310 - Microbiology of Infectious Diseases Laboratory (1)**
- **CDS 4000 - Medical Genetics (4)**
- **CDS 4050 - Pharmacology (3)**
- **CDS 4250 - Medical Biochemistry (4)**
- **CHM 1440 - General Chemistry I (4)**
- **CHM 1450 - General Chemistry II (4)**
- **CHM 1470 - General Chemistry Laboratory I (1)**
- **CHM 1480 - General Chemistry Laboratory II (1)**
- **CHM 2340 - Organic Chemistry I (4)**
- **CHM 2350 - Organic Chemistry II (4)**
- **CHM 2370 - Organic Chemistry Laboratory (2)**
- **MGT 1100 - Contemporary World Business (4)**
- **MTH 1554 - Calculus I (4)**
- **PHY 1010 - General Physics I (4)**
- **PHY 1100 - General Physics Lab I (1)**
- *PharmD coursework minimum of 16 credits transferred to Oakland University*

Clinical and Diagnostic Sciences, B.S., Specialization in Pre-Physician Assistant

Department Website

Physician Assistant (PA) practitioners serve a critical role in the delivery of healthcare in the public and private sectors. PAs perform many of the patient care tasks traditionally performed by physicians in diverse practices from family medicine to surgery and orthopedics. They perform complete medical exams, prescribe medications, and counsel patients on health and wellness.

The Pre-Physician Assistant (Pre-PA) specialization in Clinical and Diagnostic Sciences (CDS) allows students to complete the prerequisite classes for entry into most PA programs. Students may enter the Pre-PA program in their freshman year, or transfer into the program from other majors or institutions. There is no application to enter the program. Students must complete four one-credit courses in the Pre-PA curriculum designed to prepare the student for the PA application and field of study. More than one course may be taken concurrently for students transferring into the specialization.

Academic Advising

All students are required to meet with their professional academic advisor in the School of Health Sciences at least once a year to review progress toward their degree.

Pre-Physician Assistant specialization professional course requirements

Students pursuing the pre-physician assistant specialization must complete the degree requirements for the major in Clinical and Diagnostic Sciences, B.S. and take the following courses for the specialization (a minimum of 120 credits required):

- **BIO 1201 - Biology Laboratory (1)**

- CHM 1440 - General Chemistry I **(4) ***
- CHM 1450 - General Chemistry II **(4)**
- CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1480 - General Chemistry Laboratory II **(1)**
- CDS 2020 - Pre-Physician Assistant Foundations **(1)**
- CDS 2021 - Practical Applications for the Pre-Physician Assistant **(1)**
- CDS 2022 - The Pre-Physician Assistant Professional **(1)**
- CDS 2023 - Pre-Physician Assistant Professionalism Seminar **(1)**
- CDS 3300 - Microbiology of Infectious Diseases **(3)** and CDS 3310 - Microbiology of Infectious Diseases Laboratory **(1)**
- CDS 4000 - Medical Genetics **(4)**
- CDS 4010 - Human Pathology **(4)**
- CDS 4050 - Pharmacology **(3)**
- CDS 4230 - Medical Immunology **(3)**
- CDS 4250 - Medical Biochemistry **(4)**
- HS 2000 - Introduction to Health and Health Behaviors **(3)** and HS 2050 - Introduction to Health and Health Behaviors Learning Lab **(1)**
- NTR 2500 - Human Nutrition and Health **(3)**
- PSY 1000 - Introduction to Psychology **(4) ***
- PSY 2250 - Introduction to Life-Span Developmental Psychology **(4) ***
- WHP 3700 - Culture, Ethnicity and Well-being **(3)**
- WRT 1060 - Composition II **(4)**
- **and twenty (20) credits of CDS electives (approved non-CDS elective HS 1000)**

CDS Electives - 20 credits

- AHS 3310 - Health Care Safety **(4)**
- AHS 3320 - Delivering Safe Patient Care **(4)**
- CDS 4020 - Molecular Diagnostics **(3)**
- CDS 4140 - Hematology/Hemostasis I **(3)**
- CDS 4270 - Clinical Chemistry **(4)**
- CDS 4600 - Molecular Mechanisms of Bacterial Pathogenesis **(3)**
- CDS 4700 - Medical Endocrinology **(4)**
- CDS 4995 - Directed Research **(1 TO 4)**
- CDS 4996 - Independent Study **(1 TO 3)**
- **CDS 5030 - Histopathology (4) ****
- CHM 2340 - Organic Chemistry I **(4)**
- HS 3500 - Health Behavior Theories **(3)**
- PH 3000 - Introduction to Public Health **(3)**
- PH 4650 - Social Determinants of Health **(4)**
- PHY 1010 - General Physics I **(4) *** and PHY 1100 - General Physics Lab I **(1)**

Note

Note that several required courses satisfy general education requirements. See courses marked with "**"

Clinical and Diagnostic Sciences, B.S., Specialization in Radiologic Technology

Department Website

A Radiologic (X-ray) Technologist is a professional responsible for the administration of ionizing radiation for diagnostic or research purposes. The radiologic technologist must integrate complex knowledge and advanced technical skills in the imaging of internal structures. Radiologic technologists apply knowledge of anatomy, physiology, positioning and radiographic technique in the performance of their duties.

Individuals interested in a radiography career must be able to communicate effectively with patients and other health care professionals. The radiologic technologist must display compassion, competence and concern in order to meet the special needs of the patient. Direct contact is required when maneuvering the patient into position for various procedures. Radiography is a rewarding career that combines patient care with modern medical technology.

Admission to clinical specialization internship

To be accepted in a clinical specialization internship, students must submit a formal application. Application for the radiologic technology internship program is processed in the winter semester of the sophomore year (or winter semester following completion of the Clinical and Diagnostic Sciences core curriculum) prior to the August start date of each year. Acceptance into the program is competitive and based on the prerequisite math and science grade point average, personal interview, entrance exam score, and letters of recommendation. Applicants are required to have current CPR ("Healthcare Provider") certification through the American Heart Association. Patient contact experience, volunteering with patients and advanced course work are considered favorably in the admissions process. The didactic course work is completed at Oakland University and the supervised clinical experience in the Radiologic Technology Departments at various Beaumont Health locations.

It is recommended that students have at least a 3.00 overall GPA. Students with lower grade point averages may be admitted provisionally pending satisfactory completion of appropriate fall semester, junior-year course work. Students should check the clinical program's website for exact application dates.

Grade point policy

Students in the radiologic technology specialization whose cumulative grade point average falls below a 2.80 are not able to graduate with the professional specialization designation. In these cases, students are eligible to graduate with a Clinical and Diagnostic Sciences Pre-clinical professions specialization.

In order to remove program probationary status, students must raise their cumulative major grade point average to 2.80 or higher.

Academic Advising

All students are required to meet with their professional academic advisors in the School of Health Sciences at least once a year to review progress towards their degree.

Radiologic technology specialization professional course requirements

Students pursuing the radiologic technology specialization must complete the degree requirements for the major in Clinical and Diagnostic Sciences, B.S. and take the following courses for the specialization (a minimum of 120 credits required):

- PHY 1010 - General Physics I (4)
- PHY 1020 - General Physics II (4)
- RAD 3110 - Methods of Patient Care I (2)
- RAD 3310 - Radiologic Physics I (3)
- RAD 3330 - Principles of Radiographic Exposure I (3)
- RAD 3350 - Principles of Radiographic Exposure II (1)
- RAD 3410 - Radiographic Procedures I (4)
- RAD 3420 - Radiographic Procedures II (4)
- RAD 3440 - Radiographic Procedures III (2)
- RAD 3510 - Radiographic Laboratory I (1)
- RAD 3520 - Radiographic Laboratory II (1)
- RAD 4080 - Radiation Biology and Protection (1)
- RAD 4110 - Methods of Patient Care II (1)
- RAD 4310 - Radiologic Physics II (3)
- RAD 4330 - Principles of Radiographic Exposure III (2)
- RAD 4340 - Principles of Radiographic Exposure IV (2)
- RAD 4410 - Radiographic Procedures IV (3)
- RAD 4420 - Radiographic Procedures V (3)
- RAD 4440 - Medical Imaging Practices (4)
- RAD 4510 - Radiographic Laboratory III (1)
- RAD 4520 - Radiographic Laboratory IV (1)
- RAD 4970 - Senior Seminar (2)
- RAD 4960 - Clinical Practicum I (3)
- RAD 4961 - Clinical Practicum II (3)
- RAD 4962 - Clinical Practicum III (3)
- RAD 4963 - Clinical Practicum IV (3)
- RAD 4964 - Clinical Practicum V (3)
- RAD 4965 - Clinical Practicum VI (3)

Advanced Modalities for Radiologic Technologists

Professionals who are currently American Registry of Radiologic Technologists (ARRT) registered may expand on their existing knowledge in the areas of Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and Mammography, in affiliation with Beaumont Health. Each course is approximately one semester (15 - 17 weeks) in length and includes three to four days of clinical and one three-hour class day per week. Clinical hours take place on days and afternoon shifts at various Beaumont Health locations. Other clinical sites, locations and hours of attendance may be required. Clinical shifts vary based on the clinical rotation schedule, as assigned. With permission, additional clinical time may be allowed. Didactic coursework may be offered online. These advanced modality courses demand a high level of student professionalism, personal commitment, and academic focus.

Students may apply for admission to one of the modality courses listed below, through the Radiologic Technology program application process. Applicants are required to hold current ARRT registration or become registered with the ARRT within two weeks after the modality course start date and they must also hold current CPR ("Healthcare Provider") certification through the American Heart Association. Applications are accepted year round and the courses may be scheduled any semester based on the number of applicants. Acceptance into a modality course is based on previous math and science grade point average, personal interview, and letters of recommendation.

Modality Courses in Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and Mammography

- RAD 4801 - Computed Tomography (6)
- RAD 4803 - Magnetic Resonance Imaging (7)
- RAD 4804 - Mammography (6)

Environmental Health and Safety, B.S.

Department Website

The Bachelor of Science in Environmental Health and Safety (EHS) degree within the Department of Public and Environmental Wellness provides a course-based and experiential education in environmental health, occupational safety and industrial hygiene concepts. This specialized discipline focuses on protecting people, property and the environment.

Students will develop expertise in identifying risks, evaluating and mitigating hazards before they cause damage or harm. Graduates of the program are prepared to become effective safety and health professionals.

The Bachelor of Science in Environmental Health and Safety is accredited by the American Board of Engineering and Technology (ABET).

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the B.S. degree with a major in Environmental Health and Safety

Students seeking the Bachelor of Science degree with a major in Environmental Health and Safety must complete a minimum of 120 credits, including the following requirements:

1. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

2. Complete the Environmental Health and Safety required courses

- BIO 1002 - Human Biology (4) **or** BIO 1200 - Biology I (4)
- CHM 1040 - Introduction to Chemical Principles (4)
- CHM 2010 - Introduction to Organic and Biological Chemistry (4)
- EHS 1100 - Healthy Workplace: Protecting People and the Environment (3) *
- EHS 2250 - Environmental Health and Safety Training Methods (3)
- EHS 2350 - Occupational Safety and Health Standards (3)
- EHS 2450 - Professional Practice and Leadership Development (3)

- EHS 2550 - Basic Statistics for Health Sciences (3) * **or** STA 2220 - Introduction to Statistical Concepts and Reasoning (4) *
- EHS 3300 - Safety and Health Administration and Programs (3)
- EHS 3330 - Fire Prevention and Protection (3)
- EHS 3380 - Environmental Health and Safety Engineering and Technology (3)
- EHS 4100 - Fundamentals of Occupational Hygiene (3)
- EHS 4200 - Applied Environmental and Occupational Hygiene (4)
- EHS 4410 - Accident/Incident Investigation and Analysis (3)
- EHS 4420 Construction Safety (3)
- EHS 4430 Robotic and Automation System Safety Analysis (3)
- EHS 4440 - Environmental Standards (3)
- EHS 4450 - Ergonomics (3)
- EHS 4460 - Industrial and Environmental Toxicology (3)
- EHS 4550 Environmental Pollution and Controls (3)
- EHS 4950 - Environmental Health and Safety Capstone Course Internship (4) **(may only be taken with permission of the EHS program director)**
- HS 2000 - Introduction to Health and Health Behaviors (3) **and** HS 2050 - Introduction to Health and Health Behaviors Learning Lab (1)
- PHY 1200 - The Physics of Everyday Life (4) * **or** PHY 1010 - General Physics I (4) *
- PSY 1000 - Introduction to Psychology (4) *
- MGT 1100 - Contemporary World Business (4) *
- WRT 3082 - Business Writing (4)
- ***In lieu of EHS 1100 (3), students may substitute EHS 1000 (1) or EHS 1150 (2)**

3. Elective credits

Minimum 14 credits

- AHS 3310 - Health Care Safety (4)
- AHS 3340 - Hospital Safety and Health (4)
- EHS 3250 - Quantitative Methods for Environmental Health and Safety (4)
- EHS 3510 - Noise Control and Measurement (2)
- EHS 4230 - Radiation Safety (3)
- EHS 4340 - Ventilation and Emerging Technologies (4)
- EHS 4350 - Radiation Exposure Control (2)
- EHS 4998 - Environmental Health and Safety Research (3)
- ENV 3540 - Global Environmental Governance (4) **or** PS 3730 - Global Environmental Governance (4)
- HRD 3100 - Introduction to Human Resource Development (4)
- HRD 3210 - Group/Team Development and Leadership (4)
- HRD 3300 - Instructional Design and Development (4)
- HRD 3440 - Introduction to Labor and Employment Relations (4)
- HRD 3445 - Introduction to Public Sector Labor and Employment Relations (4)
- HRD 4410 - The Study of Labor and Work Organizations (4)
- HRD 3530 - Workforce Diversity (4)
- MGT 3000 - Survey of Management (3)
- PH 3000 - Introduction to Public Health (3) *
- PHL 1300 - Introduction to Ethics (4)
- POM 3000 - Survey of Operations Management (3)

- WRT 1050 - Composition I (4)
or any other course approved by the program director in writing through the approved petition of exception form

Grade Point Policy

Environmental Health and Safety majors must achieve minimum course grades of C in all math and science courses. Environmental Health and Safety majors and minors must achieve minimum course grades of C+ in all required EHS courses. If a student earns a final course grade below the minimum, they should meet with their academic adviser and must repeat the course in which the unsatisfactory grade was earned.

Internship

EHS students must register for EHS 4950 - Environmental Health and Safety Capstone Course Internship (4). It is highly encouraged that students complete additional internships and they are not required to register for these as long as they have registered for EHS 4950 and completed at least one.

Environmental Health and Safety, B.S. completion sequence for Certified Safety Professionals

The School of Health Sciences offers the Certified Safety Professional (CSP) an opportunity to earn a Bachelor of Science in Environmental Health and Safety (EHS) through a CSP to BS EHS completion program. The student outcomes and educational objectives established for the BS EHS program are the same for traditional and CSP students, including course objectives and teaching methodologies. Students who have satisfactorily completed a regionally accredited associate or baccalaureate degree and who possess a valid, current CSP certification may apply for admission to the CSP to BS EHS degree completion program. A cumulative GPA of C+ or better is required for admission to the CSP to BS EHS degree completion sequence. Certified safety professionals with a grade below C+ may be admitted to the University under pre-CSP EHS status and change to CSP BS EHS status upon completion of a minimum of 12 credits (applicable to the EHS program) at Oakland University with a minimum grade of C+. Certified safety professionals must complete all credits and/or courses required in the BS EHS degree program. Completion may be achieved in the following manner:

1. Graduates from a regionally accredited associate or bachelor degree program

Twenty-two (22) Environmental Health and Safety credits will be granted through a course competency process. This process includes:

- Successful completion of the CSP examination
- Evidence of a valid, current CSP certification
- Registration for competency credits as per the OU Undergraduate Catalog
- Registration for approved competency credit courses to include EHS 1100, EHS 2250, EHS 2350, EHS 3300, EHS 3380, EHS 4410, and EHS 4420

2. Students seeking a Bachelor of Science degree with a major in Environmental Health and Safety

Must complete a minimum of 120 credits as outlined in the official Oakland University catalog. The minimum required courses may be satisfied through a combination of credits delivered by Oakland University, transfer credits from regionally accredited

institutions of higher education, and CSP competency credits. A minimum of 32 credits must be upper division credits from Oakland University.

Environmental Health and Safety, B.S. completion sequence for MIOSHA Training Institute Certificate holders

The Michigan Occupational Safety and Health Administration (MIOSHA) and Oakland University formed a new alliance establishing the MIOSHA Training Institute (MTI) to Bachelor of Science in Environmental Health and Safety Degree Program. This new program is available to those students who have a valid MTI Level 2 Safety and Health Management Systems (SHMS) certificate. Students who have the aforementioned certificate from MTI are eligible to receive up to 12 credits toward the Bachelor of Science in Environmental Health and Safety at Oakland University.

Students seeking a Bachelor of Science degree with a major in Environmental Health and Safety (EHS) must complete a minimum of 120 credits as outlined above. The minimum required courses may be satisfied through a combination of credits delivered by Oakland University, transfer credits from regionally accredited institutions of higher education, and MTI competency credits. A minimum of 32 credits must be upper division credits from Oakland University.

In order to receive a B.S. in EHS degree, each student must meet all the requirements of the program published in this catalog.

Courses for which are eligible for competency credit through the MTI-OU program are:

- EHS 1100 - Healthy Workplace: Protecting People and the Environment (3)
- EHS 2350 - Occupational Safety and Health Standards (3)
- EHS 3300 - Safety and Health Administration and Programs (3)
- EHS 4410 - Accident/Incident Investigation and Analysis (3) ***In lieu of EHS 1100 (3), students may substitute EHS 1000 (1) and EHS 1150 (2)**

Environmental Health and Safety, B.S. completion agreement for Trinidad State Junior College Associate Degree holders

The School of Health Sciences offers holders of an associate degree in Occupational Safety and Health from Trinidad State Junior College (TSJC) an opportunity to earn a Bachelor of Science in Environmental Health and Safety (EHS) through an articulation agreement. The student outcomes and educational objectives established for the BS EHS program are the same for traditional and TSJC students, including course objectives and teaching methodologies.

Students seeking a Bachelor of Science degree with a major in Environmental Health and Safety (EHS) must complete a minimum of 120 credits as outlined above. The minimum required courses may be satisfied through a combination of credits delivered by Oakland University and up to 70 transfer credits from Trinidad State Junior College. A minimum of 32 credits must be upper division credits from Oakland University.

Students who have satisfactorily completed an Associate Degree in Occupational Health and Safety (OSH) at TSJC may apply for admission to the BS EHS degree completion program at Oakland University. These students will have the following benefits:

1. PSY 1000 - Introduction to Psychology will count in Oakland University's Social Science General Education category
2. EHS 1100 - Healthy Workplaces: Protecting People and the Environment requirement will be satisfied
3. HS 2000 - Introduction to Health and Health Behaviors will be satisfied

EHS elective credits requirement will be satisfied.

Exercise Science, B.S.

Department Website

The Bachelor of Science in Exercise Science explores the interrelationships among lifestyle, physical activity and health, and the science of improving human performance.

Opportunities exist for students to establish personal programs of exercise, weight control, nutrition, stress management and substance abuse avoidance. Disease prevention and quality of life are components of many of the course offerings. Selecting courses in exercise science can be especially meaningful to students entering a health-related career, with the current emphasis placed on health promotion and disease prevention within the health care delivery system.

The exercise science major allows students opportunities for practicum, research, and laboratory experiences. The major prepares graduates for positions in the field and for competitive graduate degree programs.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the B.S. degree with a major in Exercise Science

Students pursuing a degree in Exercise Science must complete a minimum of 123 credits, including the following requirements.

1. General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity and Capstone. For details, refer to the General Education Requirements section of the catalog.

2. Complete the exercise science core courses

3. Complete the pre-physical therapy academic concentration, Orthotist and Prosthetist Assistant Studies Specialization or electives to meet a minimum of 123 credits. Students are encouraged to complete a minor to contribute to the elective requirements.

Exercise Science Core Curriculum:

- BIO 1200 - Biology I (4)
- BIO 2100 - Human Anatomy (4)
- BIO 2101 - Human Anatomy Laboratory (1) or BIO 3621 - Physiology Laboratory (1)
- BIO 2600 - Human Physiology (4)
- CHM 1440 - General Chemistry I (4) * and CHM 1470 - General Chemistry Laboratory I (1)

- EXS 1000 - Exercise (Strength Training) and Health Enhancement (2) or EXS 1100 - Cardiovascular Fitness Training (2)
- EXS 2200 - Introduction to Exercise Science (2)
- EXS 2410 - Nutrition for Exercise, Sport and Health (3) or NTR 2500 - Human Nutrition and Health (3) and NTR 3250 Sports Nutrition (3)
- EXS 2700 - Safety and First Aid in Exercise Settings (2)
- EXS 3010 - Exercise Physiology (3)
- EXS 3020 - Biomechanics (3)
- EXS 3030 - Motor Control (3)
- EXS 4030 - Assessment and Interventions Laboratory (3)
- EXS 4715 - Integrated Laboratory in Exercise Science (3) *
- EXS 4960 - Practicum in Exercise Science (3) or EXS 4995 - Directed Research (3)
- HS 2000 - Introduction to Health and Health Behaviors (3) * and HS 2050 Introduction to Health and Health Behaviors Lab (1) *
- MTH 1441 - Precalculus (4) or MTH 1554 - Calculus I (4) or MTH 1331 - College Algebra (4) and MTH 1332 - Trigonometry (3)
- PHY 1010 - General Physics I (4) * or PHY 1510 - Introductory Physics I (4)
- PHY 1100 - General Physics Lab I (1)
- PSY 1000 - Introduction to Psychology (4)
- PSY 2500 - Research Design in Psychology (4)
- STA 2220 - Introduction to Statistical Concepts and Reasoning (4) *

*Indicates courses that fulfill General Education Requirements.

Complete a minimum of 13 credit hours of electives

Electives can be chosen either from the following recommended courses or any course not required for the Exercise Science degree or used to fulfill general education requirements (not required for the Pre-PT concentration or the Orthotist and Prosthetist Assistant Studies specialization).

- EXS 1000 - Exercise (Strength Training) and Health Enhancement (2)
- EXS 1100 - Cardiovascular Fitness Training (2)
- EXS 1500 - Exercise (Judo) and Health Enhancement (2)
- EXS 2000 - Group Exercise Instruction I (2)
- EXS 2100 - Group Exercise Instruction II (2)
- EXS 3015 - Exercise Physiology Laboratory (1)
- EXS 3510 - Clinical Assessments (3)
- EXS 3520 - Material Characteristics (2)
- EXS 3535 - Patient & Practice Management (1)
- EXS 3540 - Fit, Function and Modifications (3)
- EXS 3550 - Neuropathic Disorders (1)
- EXS 4100 - Introduction to Personal Training (2)
- EXS 4110 - Advanced Personal Training (2)
- EXS 4200 - Physical Activity and Aging (2)
- EXS 4210 - Children and Exercise (2)
- EXS 4300 - Human Performance Enhancement (2)
- EXS 4310 - Environment and Human Performance (2)
- EXS 4400 - Obesity and Physical Activity (2)
- EXS 4500 - Healthy Lifestyle Choices (2)

- EXS 4510 - Spinal Orthotics (2)
- EXS 4520 - Upper Extremity Orthotics (2)
- EXS 4530 - Lower Extremity Orthotics (3)
- EXS 4540 - Upper Extremity Prosthetics (2)
- EXS 4550 - Lower Extremity Prosthetics (3)
- EXS 4600 - Health and Disease (2)
- EXS 4620 - Clinical Biomechanics (2)
- EXS 4630 - Basic Athletic Training (2)
- EXS 4640 - Exercise Electrocardiography (2)
- EXS 4650 - Yoga Therapy (3)
- EXS 4700 - Corporate and Worksite Wellness Programs (2)
- EXS 4800 - Exercise Endocrinology (2)
- EXS 4810 - Physical Activity Epidemiology (2)
- EXS 4830 - Muscle Physiology (2)
- EXS 4900 - Special Topics (1 TO 4)
- EXS 4996 - Independent Study (1 TO 4)
- EXS 4997 - Apprentice College Teaching (1 TO 3)

Exercise Science, B.S., Concentration in Pre-Physical Therapy

Department Website

Students may choose the pre-physical therapy academic concentration (see below) or complete elective credits to meet a minimum of 123 credits and satisfy university requirements for 3000/4000 level courses. See Exercise Science, B.S. and advisor for complete details on the specialization.

Specific offerings for each semester may be found in the Schedule of Classes.

Required courses:

- CDS 2100 - Medical Terminology (1)
- CDS 4010 - Human Pathology (4)
- CHM 1450 - General Chemistry II (4) CHM 1480 - General Chemistry Laboratory II (1)
- PHY 1020 - General Physics II (4) PHY 1520 - Introductory Physics II (4)
- PHY 1110 - General Physics Lab II (1)
- PSY 2250 - Introduction to Life-Span Developmental Psychology (4)
- PT 3020 - Physical Therapy as a Profession (2)
- **Open Elective (to total 1 credit)**
- **EXS electives (4 credits)**

Exercise Science, B.S., Specialization in Orthotist and Prosthetist Assistant Studies

Department Website

The Orthotist and Prosthetist Assistant Studies (O&P) specialization prepares students for a career as an O&P Assistant. O&P Assistants work in collaboration with clinical Orthotists and Prosthetists, as well as other healthcare providers, to design, fit and

modify orthotic and prosthetic devices. They maintain a presence from the first assessment to follow up with the patient, encompassing the design, fabrication and fit of their devices.

Specific offerings for each semester may be found in the Schedule of Classes.

Students pursuing a degree in Exercise Science with a Specialization in Orthotist and Prosthetist Assistant Studies must complete a minimum of 123 credits

To earn the specialization, students must meet the requirements outlined below and complete the following courses with a minimum grade of B-. See Exercise Science, B.S. and advisor for complete details on the specialization.

- CDS 2100 - Medical Terminology (1)
- EXS 3510 - Clinical Assessments (3)
- EXS 3520 - Material Characteristics (2)
- EXS 3535 - Patient & Practice Management (1)
- EXS 3540 - Fit, Function and Modifications (3)
- EXS 3550 - Neuropathic Disorders (1)
- EXS 4510 - Spinal Orthotics (2)
- EXS 4520 - Upper Extremity Orthotics (2)
- EXS 4530 - Lower Extremity Orthotics (3)
- EXS 4540 - Upper Extremity Prosthetics (2)
- EXS 4550 - Lower Extremity Prosthetics (3)

Health Sciences, B.S.

Department Website

A Bachelor of Science in Health Sciences combines a broad spectrum of behavioral sciences, social sciences, natural and health sciences courses and electives for students who desire health focused academic experience. In addition, students choose one of three academic concentrations to obtain greater exposure to a specific health discipline: including holistic health, pre-health professional and pre-pharmacy.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the B.S. degree with a major in Health Sciences

Students pursuing a degree in health sciences must complete the following requirements.

1. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

2. Complete the prescribed number of credits from the following courses

- **BIO 1200 - Biology I (4)***
- **BIO 2100 - Human Anatomy (4)**
- **BIO 2101 - Human Anatomy Laboratory (1) or BIO 3621 - Physiology Laboratory (1)**
- **BIO 2600 - Human Physiology (4) or BIO 3620 - Medical Physiology (4) or BIO 4620 - Advanced Human Physiology (4)**
- **HS 2000 - Introduction to Health and Health Behaviors (3)* and HS 2050 - Introduction to Health and Health Behaviors Learning Lab (1)***
- **HS 3500 - Health Behavior Theories (3)***
- **HS 4500 - Ethics in Health Care (4)**
- **PSY 1000 - Introduction to Psychology (4)* or SOC 1010 - Introduction to Sociology through Health and Medicine (4)***
- **PH 3000 - Introduction to Public Health (3)***
- ***Courses that also satisfy the university general education requirement.**

3. Complete the course requirements specified under one of the academic concentration areas.

- Health Sciences, B.S., Concentration in Holistic Health
- Health Sciences, B.S., Concentration in Pre-Health Professional Studies
- Health Sciences, B.S., Concentration in Pre-Pharmacy

Health Sciences, B.S., Concentration in Holistic Health

Department Website

The Holistic Health concentration prepares students for many traditional and non-traditional health and service-oriented professions and graduate programs.

Students completing the Health Sciences, B.S. with an academic concentration in Holistic Health must complete a minimum of 120 credits and satisfy all University degree requirements for the major in health sciences and take the following courses.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the B.S. degree with a major in Health Sciences

Students pursuing a degree in health sciences must complete the following requirements.

Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Complete the prescribed number of credits from the following courses

- BIO 1200 - Biology I **(4)***
- BIO 2100 - Human Anatomy **(4)**
- BIO 2101 - Human Anatomy Laboratory **(1)** **or** BIO 3621 - Physiology Laboratory **(1)**
- BIO 2600 - Human Physiology **(4)** **or** BIO 3620 - Medical Physiology **(4)** **or** BIO 4620 - Advanced Human Physiology **(4)**
- HS 2000 - Introduction to Health and Health Behaviors **(3)*** **and** HS 2050 - Introduction to Health and Health Behaviors Learning Lab **(1) ***
- HS 3500 - Health Behavior Theories **(3)***
- HS 4500 - Ethics in Health Care **(4)**
- PH 3000 - Introduction to Public Health **(3)***
- PSY 1000 - Introduction to Psychology **(4)*** **or** SOC 1010 - Introduction to Sociology through Health and Medicine **(4)***
- ***Courses that also satisfy the university general education requirement**

Complete the course requirements specified under the Holistic Health Concentration

Required courses

- **HS 3250 - Research Methods in Health Sciences (3) or PSY 2500 - Research Design in Psychology (4)**
- **HS 3400 - Contemporary Topics in Health (3)**
- **HS 3410 - Integrative Holistic Health (3)**
- **HS 4430 - Modalities for Healing (3)**
- **HS 4440 - Healing Traditions (3)**
- **HS 4450 - Laughter as Therapeutic Modality (3)**
- **HS 4460 - Mindfulness (3)**
- **PH 3500 - Public Health Program Implementation (4)**
- **WHP 3700 - Culture, Ethnicity and Well-being (3)**

Number of required elective credits varies

The number of required elective credits varies based on core courses completed and are selected with assistance from your academic adviser, based on your career goals, from an approved list of courses. Students must achieve a minimum of 120 total course credits and satisfy all University degree requirements to graduate.

A minimum of 34 credits from these Holistic Health concentration elective courses.

- AHS 3310 - Health Care Safety **(4)**
- AHS 3320 - Delivering Safe Patient Care **(4)**
- AHS 3340 - Hospital Safety and Health **(4)**
- AHS 4310 - Ergonomics in the Health Care Industry **(3)**
- AHS 4320 - Risk Reduction Safety Culture Improvement in Healthcare **(2)**
- AN 3220 - Medical Anthropology **(4)**
- BIO 1201 - Biology Laboratory **(1)**
- BIO 1300 - Biology II **(4)**

- BIO 3130 - Developmental Biology **(4)**
- BIO 3230 - Fundamentals of Biochemistry **(4)**
- BIO 3232 - Biochemistry I **(4)**
- BIO 3233 - Biochemistry I Laboratory **(1)**
- BIO 3330 - Ecology **(5)**
- BIO 3332 - Field Biology **(4)**
- BIO 3400 - Genetics **(4)**
- BIO 3401 - Genetics Laboratory **(1)**
- BIO 3500 - General Microbiology **(4)**
- BIO 3501 - General Microbiology Laboratory **(1)**
- BIO 4120 - Neuroanatomy **(4)**
- CDS 2100 - Medical Terminology **(1)**
- CDS 4010 - Human Pathology **(4)**
- CDS 4050 - Pharmacology **(3)**
- CDS 4250 - Medical Biochemistry **(4)**
- CDS 4300 - Clinical Microbiology **(4)**
- CHM 1040 - Introduction to Chemical Principles **(4)**
- CHM 1440 - General Chemistry I **(4)** and CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1450 - General Chemistry II **(4)** and CHM 1480 - General Chemistry Laboratory II **(1)**
- CHM 2010 - Introduction to Organic and Biological Chemistry **(4)**
- CHM 2340 - Organic Chemistry I **(4)**
- CHM 2350 - Organic Chemistry II **(4)**
- CHM 2370 - Organic Chemistry Laboratory **(2)**
- CHM 4254 - Biochemistry I **(3)**
- CHM 4257 - Biochemistry Laboratory **(3)**
- COM 1500 - Introduction to American Sign Language **(4)**
- COM 2000 - Public Speaking **(4)**
- EXS 2200 - Introduction to Exercise Science **(2)**
- EXS 2700 - Safety and First Aid in Exercise Settings **(2)**
- EXS 3010 - Exercise Physiology **(3)**
- EXS 3015 - Exercise Physiology Laboratory **(1)**
- EXS 3020 - Biomechanics **(3)**
- EXS 4100 - Introduction to Personal Training **(2)**
- EXS 4300 - Human Performance Enhancement **(2)**
- EXS 4400 - Obesity and Physical Activity **(2)**
- EXS 4500 - Healthy Lifestyle Choices **(2)**
- EXS 4600 - Health and Disease **(2)**
- EXS 4620 - Clinical Biomechanics **(2)**
- EXS 4630 - Basic Athletic Training **(2)**
- EXS 4650 - Yoga Therapy **(3)**
- EXS 4810 - Physical Activity Epidemiology **(2)**
- HS 1000 - Careers in Health **(1)**
- HS 2150 - Stress Management **(3)**
- HS 3430 - Sociology of Health and Medicine **(4)**
- HS 3440 - Introduction to Community Engagement **(4)**
- HS 3450 - Leadership and Healthcare **(4)**
- HS 3460 - Community Engaged Research Experience **(4)**

- HS 4550 - Qualitative Research Methods (4)
- HS 4900 - Special Topics (2 TO 4)
- MTH 1441 - Precalculus (4)
- MTH 1554 - Calculus I (4)
- NTR 2500 - Human Nutrition and Health (3)
- NTR 2700 - Introduction to Food Science (3)
- NTR 3120 - Community Nutrition (3)
- NTR 3140 - Food, Nutrition, and Culture (3) *
- NTR 3210 - Herbs Supplements & Nutrition (3)
- NTR 3220 - Eating Disorders (3)
- NTR 3230 - Foodborne Illnesses (2)
- NTR 3250 - Sports Nutrition (3)
- NTR 3260 - Food Politics (3)
- NTR 4100 - Nutrition and Lifecycles (4)
- NTR 4350 - Nutrient Metabolism (4)
- PH 3350 - Principles of Environmental Health Sciences (4)
- PH 3800 - Persuasion and Marketing in Health Promotion (4)
- PH 4650 - Social Determinants of Health (4)
- PH 4750 - Global Health and Social Issues (4)
- PHY 1010 - General Physics I (4)
- PHY 1020 - General Physics II (4)
- PHY 1100 - General Physics Lab I (1)
- PHY 1110 - General Physics Lab II (1)
- PHY 1510 - Introductory Physics I (4)
- PHY 1520 - Introductory Physics II (4)
- PHY 3260 - Medical Physics (4)
- PSY 2250 - Introduction to Life-Span Developmental Psychology (4)
- PSY 3210 - Child Development (4)
- PSY 3220 - Adolescence and Youth (4)
- PSY 3230 - Adulthood and Aging (4)
- PSY 3330 - Motivation (4)
- PSY 3450 - Health Psychology (4)
- SOC 1000 - Introduction to Sociology (4)
- STA 2220 - Introduction to Statistical Concepts and Reasoning (4)
- WHP 3250 - Issues in Women's Health (4)
- WHP 3600 - Wellness Facilitation (4)
- WHP 4000 - Assessment and Interventions in Wellness (4)
- WHP 4030 - Laboratory in Assessment and Interventions (4)
- WHP 4310 - Crisis Intervention and Prevention of Self Harm (4)
- WHP 4350 - Environmental Justice (4)
- WHP 4850 - Population Health, Health Policy, and Healthcare Delivery (4)
- WHP 4900 - Special Topics (1 TO 4)
- WRT 1050 - Composition I (4)
- **or any other course approved by the program director in writing through approved petition of exception form**

Health Sciences, B.S., Concentration in Pre-Health Professional Studies

Department Website

The pre-health professional concentration incorporates natural science courses to prepare students for the traditional application requirements for medical, dental, optometric, physician assistant and other professional schools.

Students completing the Health Sciences, B.S. with a concentration in pre-health professional studies must complete a minimum of 120 credits and satisfy all University degree requirements for the major in health sciences and take the following courses for the concentration.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the B.S. degree with a major in Health Sciences

Students pursuing a degree in health sciences must complete the following requirements.

Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Complete the prescribed number of credits from the following courses

- BIO 1200 - Biology I **(4)***
- BIO 2100 - Human Anatomy **(4)**
- BIO 2101 - Human Anatomy Laboratory **(1)** **or** BIO 3621 - Physiology Laboratory **(1)**
- BIO 2600 - Human Physiology **(4)** **or** BIO 3620 - Medical Physiology **(4)** **or** BIO 4620 - Advanced Human Physiology **(4)**
- HS 2000 - Introduction to Health and Health Behaviors **(3)*** **and** HS 2050 - Introduction to Health and Health Behaviors Learning Lab **(1)***
- HS 3500 - Health Behavior Theories **(3)***
- HS 4500 - Ethics in Health Care **(4)**
- PSY 1000 - Introduction to Psychology **(4)*** **or** SOC 1010 - Introduction to Sociology through Health and Medicine **(4)***
- PH 3000 - Introduction to Public Health **(3)***
- ***Courses that also satisfy the university general education requirement.**

Complete the course requirements specified under Pre-Health Professional Studies

Required courses

- BIO 1300 - Biology II **(4) ***
- CDS 4000 - Medical Genetics **(4) or** BIO 3400 - Genetics **(4)**
- CDS 4250 - Medical Biochemistry **(4) or** BIO 3232 - Biochemistry I **(4)**
- CHM 1440 - General Chemistry I **(4) *** **and** CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1450 - General Chemistry II **(4) and** CHM 1480 - General Chemistry Laboratory II **(1)**
- CHM 2340 - Organic Chemistry I **(4)**
- CHM 2350 - Organic Chemistry II **(4)**
- CHM 2370 - Organic Chemistry Laboratory **(2)**
- HS 3250 - Research Methods in Health Sciences **(3) or** PSY 2500 - Research Design in Psychology **(4) or** PSY 2250 - Introduction to Life-Span Developmental Psychology **(4)**
- NTR 2500 - Human Nutrition and Health **(3)**
- MTH 1441 - Precalculus **(4) or** MTH 1554 - Calculus I **(4)**
- STA 2220 - Introduction to Statistical Concepts and Reasoning **(4) or** EHS 2550 - Basic Statistics for Health Sciences **(3)**
- PHY 1010 - General Physics I **(4) *** **or** PHY 1510 - Introductory Physics I **(4)**
- PHY 1100 - General Physics Lab I **(1)**

Complete a minimum of 11 credits from the following: (At least 10 credits at 3000-4000 level)

The number of required elective credits varies based on core courses completed and are selected with assistance from your academic adviser, based on your career goals, from an approved list of courses. Students must achieve a minimum of 120 total course credits and satisfy all University degree requirements to graduate.

Note: Courses required for the major and the concentration cannot be counted as an elective. Students are required to satisfy the university's upper level requirement by completing at least 32 credit hours at the upper level (3000-4000).

- AHS 3310 - Health Care Safety **(4)**
- AHS 3320 - Delivering Safe Patient Care **(4)**
- AHS 3340 - Hospital Safety and Health **(4)**
- BCM 4254 - Biochemistry I **(3)**
- BIO 3000 - Biology and Society **(4)**
- BIO 3130 - Developmental Biology **(4)**
- BIO 3230 - Fundamentals of Biochemistry **(4)**
- BIO 3232 - Biochemistry I **(4)**
- BIO 3233 - Biochemistry I Laboratory **(1)**
- BIO 3330 - Ecology **(5)**
- BIO 3332 - Field Biology **(4)**
- BIO 3400 - Genetics **(4)**
- BIO 3401 - Genetics Laboratory **(1)**
- BIO 3500 - General Microbiology **(4)**
- BIO 3501 - General Microbiology Laboratory **(1)**
- BIO 4620 - Advanced Human Physiology **(4)**
- CDS 2100 - Medical Terminology **(1)**
- CDS 4000 - Medical Genetics **(4)**
- CDS 4050 - Pharmacology **(3)**
- CDS 4250 - Medical Biochemistry **(4)**
- CDS 4300 - Clinical Microbiology **(4)**

- CHM 4254 - Biochemistry I (3)
- CHM 4257 - Biochemistry Laboratory (3)
- EXS 3010 - Exercise Physiology (3)
- EXS 3015 - Exercise Physiology Laboratory (1)
- EXS 3020 - Biomechanics (3)
- EXS 4300 - Human Performance Enhancement (2)
- EXS 4400 - Obesity and Physical Activity (2)
- EXS 4500 - Healthy Lifestyle Choices (2)
- EXS 4600 - Health and Disease (2)
- EXS 4620 - Clinical Biomechanics (2)
- EXS 4630 - Basic Athletic Training (2)
- EXS 4810 - Physical Activity Epidemiology (2)
- HS 1000 - Careers in Health (1)
- HS 2150 - Stress Management (3)
- HS 3400 - Contemporary Topics in Health (3)
- HS 3430 - Sociology of Health and Medicine (4)
- HS 3440 - Introduction to Community Engagement (4)
- HS 3450 - Leadership and Healthcare (4)
- HS 3460 - Community Engaged Research Experience (4)
- HS 4450 - Laughter as Therapeutic Modality (3)
- NTR 2650 - Nutrition Assessment Methods (3)
- NTR 2651 - Nutrition Assessment Methods Laboratory (1)
- NTR 3120 - Community Nutrition (3)
- NTR 3140 - Food, Nutrition, and Culture (3) *
- NTR 3210 - Herbs Supplements & Nutrition (3)
- NTR 3220 - Eating Disorders (3)
- NTR 3230 - Foodborne Illnesses (2)
- NTR 3250 - Sports Nutrition (3)
- NTR 4100 - Nutrition and Lifecycles (4)
- NTR 4200 - Communication and Counseling in Nutrition Practice (4)
- NTR 4300 - Food Service Management (4)
- NTR 4350 - Nutrient Metabolism (4)
- PH 3500 - Public Health Program Implementation (4)
- PH 3800 - Persuasion and Marketing in Health Promotion (4)
- PH 4750 - Global Health and Social Issues (4)
- PHY 3260 - Medical Physics (4)
- PSY 2250 - Introduction to Life-Span Developmental Psychology (4)
- PSY 3010 - The Psychology of Human Sexuality (4)
- PSY 3020 - Evolution, Science, and Superstition (4)
- PSY 3030 - Evolutionary Psychology (4)
- PSY 3040 - Animal Behavior (4)
- PSY 3100 - Creativity and Innovation (4)
- PSY 3160 - Cognitive Psychology (4)
- PSY 3180 - Biological Psychology (4)
- PSY 3210 - Child Development (4)
- PSY 3220 - Adolescence and Youth (4)
- PSY 3230 - Adulthood and Aging (4)

- PSY 3330 - Motivation (4)
- PSY 3340 - Industrial and Organizational Psychology (4)
- PSY 3370 - Group Dynamics (4)
- PSY 3390 - Emotion (4)
- PSY 3410 - Adult Psychopathology (4)
- PSY 3430 - Child Psychopathology (4)
- PSY 3440 - Behavior Analysis (4)
- PSY 3450 - Health Psychology (4)
- WHP 3250 - Issues in Women's Health (4)
- WHP 3600 - Wellness Facilitation (4)
- WHP 4000 - Assessment and Interventions in Wellness (4)
- WHP 4030 - Laboratory in Assessment and Interventions (4)
- WHP 4310 - Crisis Intervention and Prevention of Self Harm (4)
- WHP 4850 - Population Health, Health Policy, and Healthcare Delivery (4)
- WHP 4900 - Special Topics (1 TO 4)
- **or any other course approved by the program director in writing through approved petition exception form**

Health Sciences, B.S., Concentration in Pre-Pharmacy

Department Website

Students pursuing a Health Sciences, B.S. at Oakland University with a pre-pharmacy concentration may pursue admission to any accredited Doctor of Pharmacy program. Students may complete their senior year of coursework at any PharmD program and credits earned from courses at this program will be transferred back to OU to complete the requirements for the Bachelor of Science with a major in health sciences program. It is highly recommended that students consult with the academic adviser prior to enrolling in any of these classes, as completion of coursework does not guarantee admission or completion of the program. Admission into an accredited PharmD program is required to complete this degree. Admission to a PharmD program is through a competitive admissions process. Once accepted, Oakland students will need to: 1) send a letter of acceptance to their academic adviser; 2) register for classes and pay tuition through the PharmD school; and 3) send official transcripts after the first year (fall/winter semesters) of the PharmD program to Oakland University.

Students must achieve a minimum of 120 total course credits with a minimum of 32 upper level (3000-4000) course credits and satisfy all University degree requirements for the major in health sciences and take the concentration courses. Completion of this concentration requires at least one year of a professional accredited pharmacy school with no fewer than 20 credits of professional PharmD coursework. Students are required to meet with their assigned academic adviser to discuss the details of the degree requirements.

Students completing the Bachelor of Science in health sciences with a concentration in pre-pharmacy studies must complete a minimum of 120 credits and satisfy all University degree requirements for the major in health sciences and take the following courses for the concentration.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the B.S. degree with a major in Health Sciences

Students pursuing a degree in health sciences must complete the following requirements.

Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Complete the prescribed number of credits from the following courses

- BIO 1200 - Biology I **(4)***
- BIO 2100 - Human Anatomy **(4)**
- BIO 2101 - Human Anatomy Laboratory **or** BIO 3621 - Physiology Laboratory **(1)**
- BIO 2600 - Human Physiology **(4)** **or** BIO 3620 - Medical Physiology **(4)** **or** BIO 4620 - Advanced Human Physiology **(4)**
- HS 2000 - Introduction to Health and Health Behaviors **(3)*** **and** HS 2050 - Introduction to Health and Health Behaviors Learning Lab **(1)***
- HS 3500 - Health Behavior Theories **(3)***
- HS 4500 - Ethics in Health Care **(4)**
- PSY 1000 - Introduction to Psychology **(4)*** **or** SOC 1010 - Introduction to Sociology through Health and Medicine **(4)***
- PH 3000 - Introduction to Public Health **(3)***
- ***Courses that also satisfy the university general education requirement**

Complete the course requirements specified under the Pre-Pharmacy Concentration

1. Required courses

- CDS 2100 - Medical Terminology **(1)**
- CDS 4250 - Medical Biochemistry **(4)** **or** CDS 4000 - Medical Genetics **(4)** **or** BIO 3400 - Genetics **(4)**
- CDS 4300 - Clinical Microbiology **(4)** **or** BIO 3500 - General Microbiology **(4)**
- CHM 1440 - General Chemistry I **(4)** **and** CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1450 - General Chemistry II **(4)** **and** CHM 1480 - General Chemistry Laboratory II **(1)**
- CHM 2340 - Organic Chemistry I **(4)**
- CHM 2350 - Organic Chemistry II **(4)**
- CHM 2370 - Organic Chemistry Laboratory **(2)**
- COM 2000 - Public Speaking **(4)**
- MTH 1554 - Calculus I **(4)**
- PHY 1010 - General Physics I **(4)** **or** PHY 1510 - Introductory Physics I **(4)**
- PHY 1100 - General Physics Lab I **(1)**
- STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** **or** EHS 2550 - Basic Statistics for Health Sciences **(3)**

2. PharmD coursework minimum of 20 credits transferred to Oakland University

OR

substitute an equivalent number of elective credits

Students not entering a PharmD program may substitute an equivalent number of elective credits. Number of required elective credits required vary based on core courses completed and are selected with assistance from your academic adviser, based on your career goals, from an approved list of courses.

Note

Electives are the same as the Health Sciences, B.S., Concentration in Pre-Health Professional Studies electives.

Interdisciplinary Healthcare Studies, B.S.

Department Website

A Bachelor of Science in Interdisciplinary Healthcare Studies offers an opportunity to acquire health expertise across disciplines that allow students to pursue a health science degree that extends beyond training for direct clinical care provision. This degree positions students to pursue job opportunities in a variety of supportive and non-clinical positions in healthcare.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the B.S. degree with a major in Interdisciplinary Healthcare Studies, B.S.

Students pursuing a degree in Interdisciplinary Healthcare Studies must complete a minimum of 120 credits, including the following requirements.

1. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

2. Complete the Healthcare Studies required courses

- **BIO 1200 - Biology I (4) ***
- **BIO 2006 - Clinical Anatomy and Physiology (5)**
- **CDS 2100 - Medical Terminology (1)**
- **EHS 2550 - Basic Statistics for Health Sciences (3)***
- **ECN 1500 - Economics in Today's World (4)***
- **HS 2000 - Introduction to Health and Health Behaviors (3) * and HS 2050 - Introduction to Health and Health Behaviors Learning Lab (1)***
- **HS 3250 - Research Methods in Health Sciences (3)**
- **HS 3300 - Interdisciplinary Health Knowledge Applications I (2)**
- **HS 3310 - Interdisciplinary Health Knowledge Applications II (2)**

- HS 3320 - Dissemination of Health Information and Research (3)
- HS 3430 - Sociology of Health and Medicine (4)
- HS 3440 - Introduction to Community Engagement (4)
- HS 3450 - Leadership and Healthcare (4)
- HS 3500 - Health Behavior Theories (3)*
- HS 4200 - Human Disease Management and Healthcare (3)
- HS 4500 - Ethics in Health Care (4) *
- MIS 1000 - Business Problem Solving with Information Technology (3) or CSI 1200 - Introduction to Computing and Programming using Excel (4)
- MIS 3010 - Survey of Management Information Systems (3)
- PH 2800 - Introduction to Health Literacy (4)
- PH 3000 - Introduction to Public Health (3)*
- PH 4750 - Global Health and Social Issues (4)
- PHL 1320 - Introduction to Ethics for Healthcare Professions (4) *
- POM 3000 - Survey of Operations Management (3)
- PSY 1000 - Introduction to Psychology (4) *
- SOC 1000 - Introduction to Sociology (4)*
- WHP 4850 - Population Health, Health Policy, and Healthcare Delivery (4)

*Courses that also satisfy the university general education requirement.

3. Complete a minimum of 12 credits

The number of required elective credits varies based on core courses completed. Students are encouraged to work with their academic adviser to assist with credit requirements. Students must achieve a minimum of 120 total course credits hours and satisfy all University degree requirements to graduate. Students may apply the elective credits courses as part of a minor.

Note

Courses required for the major and the concentration cannot be counted as an elective. Students are required to satisfy the university's upper level requirement by completing at least 32 credit hours at the upper level (3000-4000).

Nutrition, B.S.

Department Website

The Bachelor of Science in Nutrition (NTR) degree provides coursework in a wide array of nutritional domains, including community nutrition, medical nutrition therapy, and food science, among others. This degree positions students to pursue post-bachelor nutrition and wellness job opportunities in health care, nonprofit, government, industry, and academic settings. Students can apply for the dietetics specialization in their sophomore year, for entry in their junior year. The NTR degree also prepares students for graduate programs in nutrition, public health, and other health professions.

Requirements for the major in nutrition, B.S. program

Students completing a B.S. degree in Nutrition must complete a minimum of 120 credits and the following:

1. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

2. Complete the Nutrition core courses

- BIO 1200 - Biology I (4)
- BIO 2006 - Clinical Anatomy and Physiology (5) **or** BIO 2100 - Human Anatomy (4) **and** BIO 2600 - Human Physiology (4)
- CDS 2100 - Medical Terminology (1)
- CDS 3300 - Microbiology of Infectious Diseases (3) **or** BIO 3500 - General Microbiology (4) **or** BIO 3520 - Introduction to Human Microbiology (4)
- CDS 4250 - Medical Biochemistry (4)
- CHM 1440 - General Chemistry I (4)
- CHM 1450 - General Chemistry II (4)
- CHM 1470 - General Chemistry Laboratory I (1)
- CHM 1480 - General Chemistry Laboratory II (1)
- CHM 2340 - Organic Chemistry I (4)
- EHS 2550 - Basic Statistics for Health Sciences (3) **or** STA 2220 - Introduction to Statistical Concepts and Reasoning (4)
- HS 2000 - Introduction to Health and Health Behaviors (3) **and** HS 2050 - Introduction to Health and Health Behaviors Learning Lab (1)*
- HS 3500 - Health Behavior Theories (3) *
- NTR 1000 - Careers in Nutrition (1)
- NTR 2500 - Human Nutrition and Health (3)
- NTR 2650 - Nutrition Assessment Methods (3)
- NTR 2651 - Nutrition Assessment Methods Laboratory (1)
- NTR 2700 - Introduction to Food Science (3)
- NTR 2750 - Introduction to Cooking and Culinary Science (2)
- NTR 3000 - Nutrition Research Methods (3)
- NTR 3120 - Community Nutrition (3)
- NTR 3140 - Food, Nutrition, and Culture (3) *
- NTR 3230 - Foodborne Illnesses (2) - **Not required for the Specialization in Dietetics**
- NTR 4100 - Nutrition and Lifecycles (4)
- NTR 4350 - Nutrient Metabolism (4)
- NTR 4400 - Medical Nutrition Therapy I (4)
- PH 3000 - Introduction to Public Health (3) *
- PSY 1000 - Introduction to Psychology (4) **or** SOC 1000 - Introduction to Sociology (4) *
- WRT 1060 - Composition II (4)

*Courses that also satisfy the university general education requirement

3. Communication and ethics requirements

All students majoring in nutrition are required to take one (1) communication and one (1) ethics course related to health and nutrition. In addition, dietetics specialization students are required to take the NTR 4200 - Communication and Counseling in Nutrition Practice and NTR 4500 - Professional Practice & Ethics in Nutrition.

- **NTR 4200 - Communication and Counseling in Nutrition Practice (4) or PH 2800 - Introduction to Health Literacy (4) or COM 4402 - Health Communication (4)**
- **NTR 4500 - Professional Practice & Ethics in Nutrition (3) or HS 4500 - Ethics in Health Care (4)**

Other requirements

Students are required to complete the Dietetics Specialization, or the minimum number of elective credits to achieve a minimum of 120 total course credits with a minimum of 32 upper level (3000-4000) course credits and satisfy all University degree requirements to graduate.

4. Electives for the Nutrition major

Number of required elective credits varies based on core courses completed and are selected with assistance from your academic adviser, based on your career goals, from an approved list of courses. Students must achieve a minimum of 120 total course credits with a minimum of 32 upper level (3000-4000) course credits and satisfy all University degree requirements to graduate.

Note: Courses required for the major and the specialization cannot be counted as an elective.

- AN 3133 - The Food Quest (4)
- AN 3220 - Medical Anthropology (4)
- BIO 2100 - Human Anatomy (4)
- BIO 2101 - Human Anatomy Laboratory (1)
- BIO 3360 - Organic Farming (4)
- BIO 3361 - Applied Organic Farming (1)
- BIO 3400 - Genetics (4)
- BIO 4220 - Cell Biology of Cancer (4)
- BIO 4338 - Food Systems Biology (4)
- BIO 4900 - Selected Topics in Biology (1 TO 5)
- CDS 2010 - Careers in Clinical and Diagnostic Sciences (1)
- CDS 2070 - Health Care Systems Around the World (3)
- CDS 3310 - Microbiology of Infectious Diseases Laboratory (1)
- CDS 4000 - Medical Genetics (4)
- CDS 4010 - Human Pathology (4)
- CDS 4300 - Clinical Microbiology (4)
- CDS 4310 - Clinical Microbiology Laboratory (1)
- CHM 2340 - Organic Chemistry I (4)
- CHM 2350 - Organic Chemistry II (4)
- COM 2000 - Public Speaking (4)
- COM 2001 - Professional Communication (4)
- COM 2403 - Group Dynamics and Communication (4)
- COM 3200 - Persuasion (4)
- COM 3402 - Communication in Leadership (4)
- ECN 2000 - Principles of Macroeconomics (4)
- ECN 2010 - Principles of Microeconomics (4)
- ECN 3670 - Economics of Health Care (3)

- EXS 2700 - Safety and First Aid in Exercise Settings (2)
- EXS 3010 - Exercise Physiology (3)
- EXS 3015 - Exercise Physiology Laboratory (1)
- EXS 3020 - Biomechanics (3)
- EXS 3030 - Motor Control (3)
- EXS 4100 - Introduction to Personal Training (2)
- EXS 4200 - Physical Activity and Aging (2)
- EXS 4210 - Children and Exercise (2)
- EXS 4300 - Human Performance Enhancement (2)
- EXS 4400 - Obesity and Physical Activity (2)
- EXS 4500 - Healthy Lifestyle Choices (2)
- EXS 4600 - Health and Disease (2)
- EXS 4620 - Clinical Biomechanics (2)
- EXS 4630 - Basic Athletic Training (2)
- EXS 4800 - Exercise Endocrinology (2)
- EXS 4810 - Physical Activity Epidemiology (2)
- HRD 4320 - Training Needs Assessment and Program Evaluation (4)
- HS 1000 - Careers in Health (1)
- HS 2150 - Stress Management (3)
- HS 3410 - Integrative Holistic Health (3)
- HS 3430 - Sociology of Health and Medicine (4)
- HS 3440 - Introduction to Community Engagement (4)
- HS 3450 - Leadership and Healthcare (4)
- HS 3460 - Community Engaged Research Experience (4)
- HS 4430 - Modalities for Healing (3)
- HS 4440 - Healing Traditions (3)
- HS 4450 - Laughter as Therapeutic Modality (3)
- HS 4460 - Mindfulness (3)
- HS 4550 - Qualitative Research Methods (4)
- HS 4900 - Special Topics (2 TO 4)
- MIS 3020 - Information Systems and Healthcare Informatics (3)
- MKT 4040 - Consumer Behavior (4)
- MTH 1554 - Calculus I (4)
- NTR 2800 - Plant-based Diet Nutrition (3)
- NTR 3210 - Herbs Supplements & Nutrition (3)
- NTR 3220 - Eating Disorders (3)
- NTR 3250 - Sports Nutrition (3)
- NTR 3260 - Food Politics (3)
- NTR 3300 - Organizational Behavior and Health Care Systems (3)
- PH 2800 - Introduction to Health Literacy (4)
- PH 3500 - Public Health Program Implementation (4)
- PH 3800 - Persuasion and Marketing in Health Promotion (4)
- PSY 3230 - Adulthood and Aging (4)
- PHY 1010 - General Physics I (4)
- PHY 1100 - General Physics Lab I (1)
- PHY 1020 - General Physics II (4)
- PHY 1110 - General Physics Lab II (1)

- PS 3340 - Public Policy and Health Care (4)
- PSY 2250 - Introduction to Life-Span Developmental Psychology (4)
- PSY 2360 - Introduction to Individual Differences and Personality Psychology (4)
- PSY 3210 - Child Development (4)
- PSY 3220 - Adolescence and Youth (4)
- PSY 3330 - Motivation (4)
- PSY 3440 - Behavior Analysis (4)
- PSY 3450 - Health Psychology (4)
- PSY 3500 - Introduction to Psychometrics (4)
- SOC 3430 - Sociology of Health and Medicine (4)
- WHP 3010 - Equitable Wellness for Diverse Populations (4)
- WHP 3600 - Wellness Facilitation (4)
- WHP 4000 - Assessment and Interventions in Wellness (4)
- WHP 4030 - Laboratory in Assessment and Interventions (4)
- WHP 4350 - Environmental Justice (4)
- WHP 4850 - Population Health, Health Policy, and Healthcare Delivery (4)
- WHP 4900 - Special Topics (1 TO 4)
- WRT 1050 - Composition I (4)
- **or any other course approved by the program director in writing through approved petition exception form**

Nutrition, B.S., Specialization in Dietetics

Department Website

The dietetics specialization provides coursework and experiential learning for students interested in pursuing a career in the field of nutrition and dietetics.

Students in the dietetics specialization fulfill the same requirements as the Nutrition Major with the additional classes

- NTR 3100 - Dietetics Seminar (1)
- NTR 3300 - Organizational Behavior and Health Care Systems (3)
- NTR 4300 - Food Service Management (4)
- NTR 4450 - Medical Nutrition Therapy II (4)
- NTR 4600 - Community Nutrition Practicum (4)

As stated in the Nutrition B.S. Communication and Ethics Requirement (Item 3), dietetics specialization students are required to take the NTR 4200 - Communication and Counseling in Nutrition Practice and NTR 4500 - Professional Practice and Ethics in Nutrition to meet the Communication and Ethics requirements of the Nutrition major.

Applications for entry into the dietetics specialization

There is a competitive application process for entry into the dietetics specialization which includes the following requirements/components.

- A minimum grade of B- in NTR 2500
- Grade point average for science courses (recommended minimum 2.
- Overall GPA (recommended minimum 2.8)

- Personal statement
- Application

To apply, students must complete (or be enrolled in*):

- BIO 1200 - Biology I **(4)**
- BIO 2600 - Human Physiology **(4)** and BIO 3621 - Physiology Laboratory **(1)** or BIO 2006 - Clinical Anatomy and Physiology **(5)**
- CDS 3300 - Microbiology of Infectious Diseases **(3)** or BIO 3500 - General Microbiology **(4)** or BIO 3520 - Introduction to Human Microbiology **(4)**
- CHM 1440 - General Chemistry I **(4)**
- CHM 1450 - General Chemistry II **(4)**
- CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1480 - General Chemistry Laboratory II **(1)**
- CHM 2340 - Organic Chemistry I **(4)**
- EHS 2550 - Basic Statistics for Health Sciences **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)**
- HS 2000 - Introduction to Health and Health Behaviors **(3)** **and** HS 2050 - Introduction to Health and Health Behaviors Learning Lab **(1)**
- HS 3500 - Health Behavior Theories **(3)**
- NTR 1000 - Careers in Nutrition **(1)**
- NTR 2500 - Human Nutrition and Health **(3)**
- NTR 2650 - Nutrition Assessment Methods **(3)**
- NTR 2651 - Nutrition Assessment Methods Laboratory **(1)**
- PH 3000 - Introduction to Public Health **(3)**
- WRT 1060 - Composition II **(4)**

* Admittance will be conditional upon successful completion of courses in progress at the time of application

Graduation requirements

Students must complete all Nutrition courses with a minimum grade of C, achieve a minimum grade of B- in Community Nutrition Practicum and maintain a 2.5 cumulative GPA to graduate with a specialization in Dietetics. They must also have documented 20 hours of nutrition-focused community service or volunteer work.

Public Health, B.S.

Department Website

The Bachelor of Science in Public Health (PH) degree program in the Department of Public and Environmental Wellness prepares students to live and promote a healthy lifestyle. These professional skills are utilized in health enhancement, disease prevention, health education, health and fitness, corporate and worksite wellness, as well as human resource practice and management.

The PH program offers the PH Combined BS-MPH degree program.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the B.S. degree with a major in Public Health

Students seeking the Bachelor of Science degree in Public Health must complete a minimum 120 credits, including the following requirements:

1. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

2. Complete the Public Health core curriculum credits

Public Health Foundations

- EHS 2550 - Basic Statistics for Health Sciences **(3)* or** STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)***
- HS 2000 - Introduction to Health and Health Behaviors **(3)* and** HS 2050 - Introduction to Health and Health Behaviors Learning Lab **(1)**
- HS 3250 - Research Methods in Health Sciences **(3) or** PSY 2500 - Research Design in Psychology **(4)**
- MGT 1100 - Contemporary World Business **(4)*(satisfies writing intensive in general education)**
- PH 2800 - Introduction to Health Literacy **(4)**
- PSY 1000 - Introduction to Psychology **(4)***

Cultural Ethnicity and Well-Being Core

- HS 3400 - Contemporary Topics in Health **(3)**
- WHP 3010 - Equitable Wellness for Diverse Populations **(4)**
- WHP 3600 - Wellness Facilitation **(4)**
- WHP 3700 - Culture, Ethnicity and Well-being **(3)**
- WHP 4000 - Assessment and Interventions in Wellness **(4)**
- WHP 4030 - Laboratory in Assessment and Interventions **(4)**

Public Health Core

- HS 4500 - Ethics in Health Care **(4) *(satisfies writing intensive in the major)**
- PH 3000 - Introduction to Public Health **(3) *(satisfies diversity in general education)**
- PH 3500 - Public Health Program Implementation **(4)**
- PH 3800 - Persuasion and Marketing in Health Promotion **(4)**
- PH 4650 - Social Determinants of Health **(4)**
- PH 4950 - Internship in Health Promotion **(4) (Coordinator approval required) or** PH 4995 - Directed Research in Public Health **(1 TO 4) (Must be taken for 4 credits)**
- PSY 3450 - Health Psychology **(4)**

Notes

Courses above with * after them also satisfy university general education requirements.

HS 2000 is a prerequisite for HS 3250, HS 3400, PH 3500, PH 4950, WHP 3600, WHP 4000, WHP 4030

3. Complete a minimum of 25 credit hours of electives

Electives can be chosen either from the following recommended courses or students can apply courses taken as part of a minor toward the elective requirements.

Note: The number of required elective credits varies based on core courses completed. Students must achieve a minimum of 120 total credits and satisfy all University degree requirement to graduate.

Health Services

- AHS 3310 - Health Care Safety **(4)**
- AHS 3320 - Delivering Safe Patient Care **(4)**
- AHS 3340 - Hospital Safety and Health **(4)**

Health Educator

- HRD 3300 - Instructional Design and Development **(4)**
- HS 3450 - Leadership and Healthcare **(4)**
- WHP 4850 - Population Health, Health Policy, and Healthcare Delivery **(4)**

Health Promotion

- EXS 2700 - Safety and First Aid in Exercise Settings **(2)**
- HS 2150 - Stress Management **(3)**
- NTR 2500 - Human Nutrition and Health **(3)**

Environmental Health

- HS 3440 - Introduction to Community Engagement **(4)**
- PH 3350 - Principles of Environmental Health Sciences **(4)**
- WHP 4350 - Environmental Justice **(4)** or any course not required for the Public Health degree or used to fulfill general education requirements.

Grade Point Policy

To graduate with the Public Health (PH) major a student must attain a cumulative grade point average of 2.75 in all School of Health Sciences coursework applied to the core curriculum of the major (School of Health Sciences coursework includes courses in EHS, HS, PH, and WHP). Public Health majors and Wellness and Health Promotion minors must achieve minimum course grades of C+ in all core PH and WHP courses. If students earn a grade below a C+, they must meet with the program coordinator to discuss their options.

Combined Bachelor/Masters

Clinical and Diagnostic Sciences, Specialization in Medical Laboratory Sciences, B.S./Clinical and Diagnostic Sciences, M.S., Combined B.S./M.S. (Pending Approvals)

This combined bachelor/master degree program provides high-achieving students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently. Participants can graduate with a Master of Science in Clinical and Diagnostic Sciences in approximately one calendar year after completing a B.S. in Clinical and Diagnostic Sciences with a specialization in Medical Laboratory Science. Students in this program complete 12 graduate level credits at undergraduate tuition rates. Students who have earned a 3.0 or above GPA in each of the 12-credits of graduate courses will be reclassified as a graduate student through Graduate Study.

Requirements for the Combined B.S./M.S. Clinical and Diagnostic Sciences (CDS), Specialization in Medical Laboratory Sciences Degree Program

Students seeking the Combined B.S./M.S. degree plan must complete a minimum of 120, including the following requirements:

1. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity and Capstone. For details, refer to the General Education Requirements section of the catalog.

2. Complete the Clinical and Diagnostic Sciences core curriculum

- BIO 1200 - Biology I **(4)**
- BIO 2100 - Human Anatomy **(4)**
- BIO 2101 - Human Anatomy Laboratory **(1)**
- BIO 2600 - Human Physiology **(4)**
- CDS 2010 - Careers in Clinical and Diagnostic Sciences **(1)**
- CDS 2070 - Health Care Systems Around the World **(3)**
- CDS 2100 - Medical Terminology **(1)**
- CDS 2250 - Clinical Laboratory Theory and Techniques **(2) (not required for Pre-Physician Assistant, RAD, or NMT or DMS specialization)**
- HS 4500 - Ethics in Health Care **(4)**
- STA 2220 - Introduction to Statistical Concepts and Reasoning **(4) or** STA 2222 - Statistical Methods for Biology **(4) or** STA 2226 - Applied Probability and Statistics **(4)**

3. Complete the specialization course requirements for medical laboratory sciences

- CDS 4000 - Medical Genetics **(4)**
- CDS 4020 - Molecular Diagnostics **(3)**
- CDS 4140 - Hematology/Hemostasis I **(3)**

- CDS 4150 - Hematology/Hemostasis Laboratory I **(1)**
- CDS 4160 - Hematology/Hemostasis II **(4)**
- CDS 4170 - Hematology/Hemostasis Laboratory II **(1)**
- CDS 4230 - Medical Immunology **(3)**
- CDS 4240 - Immunohematology **(3)**
- CDS 4241 - Immunohematology Laboratory **(1)**
- CDS 4250 - Medical Biochemistry **(4)**
- CDS 4270 - Clinical Chemistry **(4)**
- CDS 4280 - Clinical Chemistry Laboratory **(1)**
- CDS 4300 - Clinical Microbiology **(4)**
- CDS 4310 - Clinical Microbiology Laboratory **(1)**
- CDS 4350 - Clinical Parasitology, Mycology, Virology **(3)**
- CDS 4360 - Clinical Parasitology, Mycology, Virology Lab **(1)**
- CDS 4400 - Clinical Correlations **(3)**
- CHM 1440 - General Chemistry I **(4)**
- CHM 1450 - General Chemistry II **(4)**
- CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1480 - General Chemistry Laboratory II **(1)**
- CHM 2340 - Organic Chemistry I **(4)**
- PHY 1010 - General Physics I **(4)**
- PHY 1020 - General Physics II **(4)** Two (2) credits of free electives can be used to satisfy the 120 degree credit requirement. Suggested elective course(s): HS 1000

Note

Some clinical programs may require MTH 1441. Check the individual clinical programs for current requirements.

4. Complete all CDS major program course-work with a cumulative GPA of 2.80 or higher.

- **CDS - 5020 - Molecular Diagnostics (3)**
- **CDS - 5240 - Immunohematology (3)**
- **CDS - 5350 - Clinical Parasitology, Mycology, Virology (3)**
- **CDS - 5400 - Clinical Correlations (3)**

Note

A student with a junior standing may apply to the Combined B.S./M.S. program through the graduate office. Qualified applicants will be given a delayed admission to the MLS program. (Full, formal admission will not take place until the student successfully completes his or her undergraduate degree). While there is no GPA requirement for admission to the program, students must maintain an average of 3.0 GPA throughout the curriculum.

A student accepted into the program continues his or her undergraduate degree with the substitution of four graduate courses as shown above.

Please note that students must be accepted into the program before taking any graduate level courses. If a student in the program has successfully graduated with a BS degree, he or she and is fully admitted to the graduate MLS program.

See graduate catalog for additional requirements for the Combined B.S./M.S. program.

All university and departmental requirements for each of the bachelor's degree and master's degree must be satisfied to receive both degrees. The full number of credit hours required for the bachelor's and master's degree must be completed; this includes the 12-credit of graduate courses completed as an undergraduate and approved to count towards the undergraduate and graduate degree requirements.

Environmental Health and Safety, B.S. to Safety Management, MSSM, Combined B.S./MSSM

Department Website

The Environmental Health and Safety Combined B.S. - MSSM degree plan is a bachelor/master degree program that provides high-achieving students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently. Participants can graduate with a Master of Science in Safety Management degree in approximately one calendar year after completing a B.S. in Environmental Health and Safety. Students in this program complete 10 graduate level credits at undergraduate tuition rates. Students who have a minimum overall undergraduate GPA of 3.2 and have earned a 3.0 or above GPA in each of the 10-credits of graduate courses will be reclassified as a graduate student through Graduate Study.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the Environmental Health and Safety, B.S. - MSSM Degree Plan

Students seeking the Combined B.S. - MSSM degree plan must complete a minimum 120 credits, including the following requirements:

1. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity and Capstone. For details, refer to the General Education Requirements section of the catalog.

2. Complete the Environmental Health and Safety required credits

- **BIO 1002 - Human Biology (4) or BIO 1200 - Biology I (4)**
- **CHM 1040 - Introduction to Chemical Principles (4)**
- **CHM 2010 - Introduction to Organic and Biological Chemistry (4)**
- **EHS 1100 - Healthy Workplace: Protecting People and the Environment (3)****
- **EHS 2250 - Environmental Health and Safety Training Methods (3)**
- **EHS 2350 - Occupational Safety and Health Standards (3)**
- **EHS 2450 - Professional Practice and Leadership Development (3)**
- **EHS 2550 - Basic Statistics for Health Sciences (3)* or STA 2220 - Introduction to Statistical Concepts and Reasoning (4) ***

- EHS 3300 - Safety and Health Administration and Programs (3)
- EHS 3330 - Fire Prevention and Protection (3)
- EHS 3380 - Environmental Health and Safety Engineering and Technology (3)
- EHS 4100 - Fundamentals of Occupational Hygiene (3)
- EHS 4200 - Applied Environmental and Occupational Hygiene (4)
- EHS 4410 - Accident/Incident Investigation and Analysis (3)
- EHS 4420 - Construction Safety (3)
- EHS 4430 - Robotic and Automation System Safety Analysis (3)
- EHS 4440 - Environmental Standards (3)
- EHS 4450 - Ergonomics (3)
- EHS 4460 - Industrial and Environmental Toxicology (3)
- EHS 4550 - Environmental Pollution and Controls (3)
- EHS 4950 - Environmental Health and Safety Capstone Course Internship (4) (may only be taken with permission of the EHS program director)
- HS 2000 - Introduction to Health and Health Behaviors (3) and HS 2050 Introduction to Health and Health Behaviors Learning Lab (1)
- PHY 1200 - The Physics of Everyday Life (4) * or PHY 1010 - General Physics I (4) *
- PSY 1000 - Introduction to Psychology (4)
- MGT 1100 - Contemporary World Business (4) *
- WRT 3082 - Business Writing (4)

Note

Courses above with * after them also satisfy university general education requirements

**In lieu of EHS 1100 (3), students may substitute EHS 1000 (1) or EHS 1150 (2)

3. Complete a minimum of 14 credits of electives

- AHS 3310 - Health Care Safety (4)
- AHS 3340 - Hospital Safety and Health (4)
- EHS 3250 - Quantitative Methods for Environmental Health and Safety (4)
- EHS 3510 - Noise Control and Measurement (2)
- EHS 4230 - Radiation Safety (3)
- EHS 4340 - Ventilation and Emerging Technologies (4)
- EHS 4350 - Radiation Exposure Control (2)
- EHS 4998 - Environmental Health and Safety Research (3)
- ENV 3540 - Global Environmental Governance (4) or PS 3730 - Global Environmental Governance (4)
- HRD 3100 - Introduction to Human Resource Development (4)
- HRD 3210 - Group/Team Development and Leadership (4)
- HRD 3300 - Instructional Design and Development (4)
- HRD 3440 - Introduction to Labor and Employment Relations (4)
- HRD 3445 - Introduction to Public Sector Labor and Employment Relations (4)
- HRD 3530 - Workforce Diversity (4)
- HRD 4410 - The Study of Labor and Work Organizations (4)
- HRD 4441 - Advanced Work and the Law (4)
- MGT 3000 - Survey of Management (3)

- **PH 3000 - Introduction to Public Health (3) ***
- **PHL 1300 - Introduction to Ethics (4)**
- **POM 3000 - Survey of Operations Management (3)**
- **WRT 1050 - Composition I (4)**

***or any other course approved by the program director in writing through the approved petition of exception form**

Graduate Courses:

- **EHS 5200 Advanced Safety and Health Administration (3)**
- **EHS 5400 Risk Assessment and Loss Control (3)**
- **EHS 5000 Introduction to EHS Research (4)**

Note

If a student has a minimum overall GPA of 3.2, has at least junior standing, the student may apply to the Combined BS - MSSM program through the graduate office. Qualified applicants will be given a delayed admission to the MSSM program. (Full, formal admission will not take place until the student successfully completes thier undergraduate degree with an overall GPA of 3.2).

A student accepted into the combined degree program continues his or her undergraduate degree with the substitution of three graduate courses as shown above.

Please note that students must be accepted into the combined degree program before taking any graduate level courses.

If a combined degree program student has successfully graduated with a BS degree and an overall GPA of 3.2, he or she is fully admitted to graduate MSSM program.

See graduate catalog for additional requirements for the combined B.S. - MSSM program.

All university and departmental requirements for the bachelor's and master's degree must be satisfied to earn both degrees. The full number of credit hours required for the bachelor's and master's degree must be completed; this includes the 10-credit hours of graduate courses completed as an undergraduate and approved to count towards the undergraduate and graduate degree requirements.

Exercise Science, Combined B.S./M.S.

Department Website

This combined bachelor/master degree program provides high-achieving students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently. Participants can graduate with an M.S. in Exercise Science in approximately one calendar year after completing a B.S. in Exercise Science. Students in the program complete 12 graduate level credits at the undergraduate tuition rates. Students who have a minimum overall undergraduate GPA of 3.2 and have earned a 3.0 or above GPA in each of the 12-credits of graduate courses will be reclassified as a graduate student through the Graduate School.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the Combined B.S./M.S. in Exercise Science (EXS) Degree Program

If a student has a minimum overall GPA of 3.2, has at least junior standing, and has completed half of the department credits required for the major the student may apply to the B.S./M.S. in EXS program through the graduate school. Qualified applicants will be given a delayed admission to the EXS program. (Full, formal admission will not take place until the student successfully completes his or her undergraduate degree).

A student accepted into the combined B.S./M.S. in EXS program continues his or her undergraduate degree with the substitution of 4 graduate courses.

If a combined B.S./M.S. program student has successfully graduated with a B.S. degree and an overall GPA of 3.0, he or she is fully admitted to the M.S. in EXS program.

*See graduate catalog for additional requirements for the combined B.S./M.S. program.

Students seeking the Combined B.S./M.S. in EXS program must complete a minimum of 123 credits to earn the B.S. and an additional 20 graduate credits to earn the M.S. See requirements below:

1. General Education Requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity and Capstone. For details, refer to the General Education section of the catalog.

2. Complete the foundational courses

- BIO 1200 - Biology I **(4)**
- BIO 2100 - Human Anatomy **(4)**
- BIO 2101 - Human Anatomy Laboratory **(1)** **or** BIO 3621 - Physiology Laboratory **(1)**
- BIO 2600 - Human Physiology **(4)**
- CHM 1440 - General Chemistry I **(4)** * **and** CHM 1470 - General Chemistry Laboratory I **(1)**
- EXS 1000 - Exercise (Strength Training) and Health Enhancement **(2)** **or** EXS 1100 - Cardiovascular Fitness Training **(2)**
- EXS 2200 - Introduction to Exercise Science **(2)**
- EXS 2410 - Nutrition for Exercise, Sport and Health **(3)** **or** NTR 2500 - Human Nutrition and Health **(3)** **and** NTR 3250 - Sports Nutrition **(3)**
- EXS 2700 - Safety and First Aid in Exercise Settings **(2)**
- EXS 3010 - Exercise Physiology **(3)**
- EXS 3020 - Biomechanics **(3)**
- EXS 3030 - Motor Control **(3)**
- EXS 4030 - Assessment and Interventions Laboratory **(3)**
- EXS 4715 - Integrated Laboratory in Exercise Science **(3)**
- EXS 4960 - Practicum in Exercise Science **(3)** **or** EXS 4995 - Directed Research **(3)**

- HS 2000 - Introduction to Health and Health Behaviors **(3)** and HS 2050 - Introduction to Health and Health Behaviors Learning Lab **(1)**
- MTH 1441 - Precalculus **(4)** or MTH 1554 - Calculus I **(4)** or MTH 1331 - College Algebra **(4)** and MTH 1332 - Trigonometry **(3)**
- PHY 1010 - General Physics I **(4)*** or PHY 1510 - Introductory Physics I **(4)**
- PHY 1100 - General Physics Lab I **(1)**
- PSY 1000 - Introduction to Psychology **(4)**
- PSY 2500 - Research Design in Psychology **(4)**
- STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)**

3. Complete electives in exercise science (to total 4 credits; EXS 4960 or EXS 4995 are required, but may be repeated once for credit with permission)

- EXS 1000 - Exercise (Strength Training) and Health Enhancement **(2)**
- EXS 1100 - Cardiovascular Fitness Training **(2)**
- EXS 1500 - Exercise (Judo) and Health Enhancement **(2)**
- EXS 2000 - Group Exercise Instruction I **(2)**
- EXS 2100 - Group Exercise Instruction II **(2)**
- EXS 3015 - Exercise Physiology Laboratory **(1)**
- EXS 3510 - Clinical Assessments **(3)**
- EXS 3520 - Material Characteristics **(2)**
- EXS 3540 - Fit, Function and Modifications **(3)**
- EXS 3550 - Neuropathic Disorders **(1)**
- EXS 4100 - Introduction to Personal Training **(2)**
- EXS 4110 - Advanced Personal Training **(2)**
- EXS 4200 - Physical Activity and Aging **(2)**
- EXS 4210 - Children and Exercise **(2)**
- EXS 4300 - Human Performance Enhancement **(2)**
- EXS 4310 - Environment and Human Performance **(2)**
- EXS 4400 - Obesity and Physical Activity **(2)**
- EXS 4500 - Healthy Lifestyle Choices **(2)**
- EXS 4510 - Spinal Orthotics **(2)**
- EXS 4520 - Upper Extremity Orthotics **(2)**
- EXS 4530 - Lower Extremity Orthotics **(3)**
- EXS 4540 - Upper Extremity Prosthetics **(2)**
- EXS 4550 - Lower Extremity Prosthetics **(3)**
- EXS 4600 - Health and Disease **(2)**
- EXS 4620 - Clinical Biomechanics **(2)**
- EXS 4630 - Basic Athletic Training **(2)**
- EXS 4640 - Exercise Electrocardiography **(2)**
- EXS 4650 - Yoga Therapy **(3)**
- EXS 4700 - Corporate and Worksite Wellness Programs **(2)**
- EXS 4800 - Exercise Endocrinology **(2)**
- EXS 4810 - Physical Activity Epidemiology **(2)**
- EXS 4830 - Muscle Physiology **(2)**
- EXS 4900 - Special Topics **(1 TO 4)**
- EXS 4996 - Independent Study **(1 TO 4)**

- EXS 4997 - Apprentice College Teaching (1 TO 3)

4. Graduate courses

- EXS 5010 Advanced Exercise Physiology (4)
- EXS 5020 Advanced Biomechanics (3)
- EXS 5030 Diagnostic Testing and Exercise Prescription (3)
- EXS 5040 Nutrition, Weight Management and Exercise (2)

Note

All university and departmental requirements for each of the B.S. and M.S. degrees must be satisfied to receive both degrees. The full number of credit hours required for the B.S and M.S. degrees must be completed; this includes the 12-credits of graduate courses completed as an undergraduate and approved to count towards the undergraduate and graduate degree requirements.

Public Health, Combined B.S./M.P.H.

Department Website

The Public Health, Combined B.S./M.P.H. is a combined bachelor/master degree program that provides high-achieving students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently. Participants can graduate with a Master of Public Health degree in approximately one calendar year after completing a B.S. in Public Health. Students in this program complete 12 graduate level credits at undergraduate tuition rates. Students who have a minimum overall undergraduate GPA of 3.2 and have earned a 3.0 or above GPA in each of the 12-credits of graduate courses will be reclassified as a graduate student through Graduate Study.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the Public Health, Combined B.S./M.P.H.

Students seeking the Public Health, Combined B.S./M.P.H. dual degree plan must complete a minimum 120 credits, including the following requirements:

1. Meet the university general education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity and Capstone. For details, refer to the General Education Requirements section of the catalog.

2. Complete the Public Health core curriculum credits

- EHS 2550 - Basic Statistics for Health Sciences (3) * or STA 2220 - Introduction to Statistical Concepts and Reasoning (4) *
- HS 2000 - Introduction to Health and Health Behaviors (3)

- HS 3250 - Research Methods in Health Sciences (3) **or** PSY 2500 - Research Design in Psychology (4)
- HS 3400 - Contemporary Topics in Health (3)
- HS 4500 - Ethics in Health Care (4) * (satisfies writing intensive in the major)
- MGT 1100 - Contemporary World Business (4) *(satisfies writing intensive in general education)
- PH 2800 - Introduction to Health Literacy (4)
- PH 3000 - Introduction to Public Health (3) * (satisfies diversity in general education)
- PH 3500 - Public Health Program Implementation (4)
- PH 3800 - Persuasion and Marketing in Health Promotion (4)
- PH 4650 - Social Determinants of Health (4)
- PH 4950 - Internship in Health Promotion (4) (Coordinator approval required) **or** PS 4995 - Special Topics or Directed Research (2 TO 8) (Must be taken for 4 credits)
- PSY 1000 - Introduction to Psychology (4) **or** PSY 3450 - Health Psychology (4)
- PSY 3450 - Health Psychology (4)
- WHP 3010 - Equitable Wellness for Diverse Populations (4)
- WHP 3600 - Wellness Facilitation (4)
- WHP 3700 - Culture, Ethnicity and Well-being (3)
- WHP 4000 - Assessment and Interventions in Wellness (4)
- WHP 4030 - Laboratory in Assessment and Interventions (4)

Note

Courses above with * after them also satisfy university general education requirements.

HS 2000 is a prerequisite for HS 3250, HS 3400, PH 3500, PH 4950, WHP 3600, WHP 4000, WHP 4030

Complete a minimum of 14 credits of electives

Students may choose electives from the following recommended course list or apply courses taken as part of a minor toward the elective requirements.

Note: The number of required elective credits varies based on core courses completed. Students must achieve a minimum of 120 total credits and satisfy all University degree requirements to graduate.

- AHS 3310 - Health Care Safety (4)
- AHS 3320 - Delivering Safe Patient Care (4)
- AHS 3340 - Hospital Safety and Health (4)
- WHP 3250 - Issues in Women's Health (4)
- WHP 4350 - Environmental Justice (4)
- WHP 4850 - Population Health, Health Policy, and Healthcare Delivery (4)
- **Any 1000 or 2000 level course in EXS not listed above**
- **Any 1000, 2000 or 3000 level course in HS not listed above**
- **Any 1000 or 2000 level course in EHS not listed above or any course not required for the Public Health degree or used to fulfill general education requirements.**

Graduate Courses:

- **PH 5000 Foundations of Health Behavior and Health Education (4)**
- **PH 5100 Principles of Community-Based Participatory Research (4)**

- **PH 5200 Planning, Implementation, and Evaluation of Public Health Interventions (4)**

Note

If a student has a minimum overall GPA of 3.2, has at least sophomore standing, and has completed: EHS 2550 (or STA 2220); HS 3250 (or PSY 2500); PH 2800; and PH 3500, the student may apply to the Combined B.S./M.P.H. program through the graduate office. Qualified applicants will be given a delayed admission to the M.P.H. program. (Full, formal admission will not take place until the student successfully completes his or her undergraduate degree with an overall GPA of 3.0). Applications are due February 1.

A student accepted into the Combined B.S./M.P.H. program continues his or her undergraduate degree with the substitution of three graduate courses as shown above.

Please note that students must be accepted into the Combined B.S./M.P.H. program before taking any graduate level courses.

If a Combined B.S./M.P.H. program student has successfully graduated with a B.S. degree and an overall GPA of 3.0, they are fully admitted to the graduate M.P.H. program.

See graduate catalog for additional requirements for the Combined B.S./M.P.H. program.

All university and departmental requirements for each bachelor's degree and master's degree must be satisfied to receive both degrees. The full number of credit hours required for the bachelor's and master's degree must be completed; this includes the 12-credit of graduate courses completed as an undergraduate and approved to count towards the undergraduate and graduate degree requirements.

Non Degree

Community Health Engagement Minor

Department Website

A minor in Community Health Engagement is available to students in any degree program. The minor provides students with hands-on learning opportunities focused in real-world community settings to learn about health engagement in diverse populations. A minimum of 18 credits are required for the minor including 15 core credits and a minimum of 3 elective credits.

Core required courses for the minor (15 credits):

- HS 3440 - Introduction to Community Engagement (4)
- HS 3450 - Leadership and Healthcare (4)
- HS 3460 - Community Engaged Research Experience (4)
- PH 3000 - Introduction to Public Health (3) *
- **Courses that satisfy the university general education requirements**

Elective courses (minimum of 3 credits):

- AN 3220 - Medical Anthropology (4)
- HS 3430 - Sociology of Health and Medicine (4) **or** PH 4650 - Social Determinants of Health (4) **or** WHP 3700 - Culture, Ethnicity and Well-being (3)
- HS 4900 - Special Topics (2 TO 4)

- HS 4995 - Directed Study (1 TO 4)
- NTR 3120 - Community Nutrition (3)
- PH 4750 - Global Health and Social Issues (4)
- WHP 3700 - Culture, Ethnicity and Well-being (3)
- WHP 4350 - Environmental Justice (4)

Environmental Health and Safety Minor

Department Website

A minor in Environmental Health and Safety is available to complement other majors in the School of Health Sciences and in other programs, such as human resource development, engineering, biology or chemistry. A minimum of 24 credit hours is required for a minor in Environmental Health and Safety.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the environmental health and safety minor

- EHS 1100 - Healthy Workplace: Protecting People and the Environment (3)
- EHS 2250 - Environmental Health and Safety Training Methods (3)
- EHS 2350 - Occupational Safety and Health Standards (3)
- EHS 3300 - Safety and Health Administration and Programs (3)
- EHS 3380 - Environmental Health and Safety Engineering and Technology (3)
- EHS 4100 - Fundamentals of Occupational Hygiene (3)
- EHS 4410 - Accident/Incident Investigation and Analysis (3)
- EHS 4440 - Environmental Standards (3)

**In lieu of EHS 1100 (3), students may substitute EHS 1000 (1) or EHS 1150 (2)*

Grade point policy

Environmental Health and Safety minors must achieve minimum course grades of C+ in all required EHS courses. If a student earns a final course grade below the minimum, they should meet with their academic adviser and must repeat the course in which the unsatisfactory grade was earned.

Exercise Science Minor

Department Website

A 20-credit minor in Exercise Science is available to students in any major, other than the exercise science major, seeking a formal introduction to the exercise science field.

Specific offerings for each semester may be found in the Schedule of Classes.

Courses required for the minor (13 credits)

- EXS 1000 - Exercise (Strength Training) and Health Enhancement (2) **or** EXS 1100 - Cardiovascular Fitness Training (2)
- EXS 2200 - Introduction to Exercise Science (2)

- EXS 3010 - Exercise Physiology (3) *
- EXS 3020 - Biomechanics (3) *
- EXS 3030 - Motor Control (3)

Choose a minimum of 7 credits of electives from the following courses:

- EXS 1500 - Exercise (Judo) and Health Enhancement (2)
- EXS 2000 - Group Exercise Instruction I (2)
- EXS 2100 - Group Exercise Instruction II (2)
- EXS 2700 - Safety and First Aid in Exercise Settings (2)
- EXS 3015 - Exercise Physiology Laboratory (1)
- EXS 3510 - Clinical Assessments (3)
- EXS 3520 - Material Characteristics (2)
- EXS 3535 - Patient & Practice Management (1)
- EXS 3540 - Fit, Function and Modifications (3)
- EXS 3550 - Neuropathic Disorders (1)
- EXS 4100 - Introduction to Personal Training (2)
- EXS 4110 - Advanced Personal Training (2)
- EXS 4200 - Physical Activity and Aging (2)
- EXS 4210 - Children and Exercise (2)
- EXS 4300 - Human Performance Enhancement (2)
- EXS 4310 - Environment and Human Performance (2)
- EXS 4400 - Obesity and Physical Activity (2)
- EXS 4500 - Healthy Lifestyle Choices (2)
- EXS 4510 - Spinal Orthotics (2)
- EXS 4520 - Upper Extremity Orthotics (2)
- EXS 4530 - Lower Extremity Orthotics (3)
- EXS 4540 - Upper Extremity Prosthetics (2)
- EXS 4550 - Lower Extremity Prosthetics (3)
- EXS 4600 - Health and Disease (2)
- EXS 4620 - Clinical Biomechanics (2)
- EXS 4630 - Basic Athletic Training (2)
- EXS 4640 - Exercise Electrocardiography (2)
- EXS 4650 - Yoga Therapy (3)
- EXS 4700 - Corporate and Worksite Wellness Programs (2)
- EXS 4800 - Exercise Endocrinology (2)
- EXS 4810 - Physical Activity Epidemiology (2)
- EXS 4830 - Muscle Physiology (2)
- EXS 4900 - Special Topics (1 TO 4)
- EXS 4996 - Independent Study (1 TO 4)
- EXS 4997 - Apprentice College Teaching (1 TO 3)
- HS 2000 - Introduction to Health and Health Behaviors (3) and HS 2050 - Introduction to Health and Health Behaviors Learning Lab (1)
- HS 2150 - Stress Management (3)
- WHP 3600 - Wellness Facilitation (4)
- **General Education courses in the minor that satisfies the following areas of requirement:**
- HS 2000 (Natural Science and Technology)

Additional Information

Courses denoted with an asterisk (*) represent prerequisite courses for admission to the Master of Science in Exercise Science program. An additional prerequisite for admission to this graduate program is STA 2220 or STA 2226 or PSY 2510.

Holistic Health Minor

Department Website

A minor in Integrative Holistic Health is available to students in any degree program. A minimum of 18 credits are required for the minor including 15 core credits and a minimum of 3 elective credits.

Specific offerings for each semester may be found in the Schedule of Classes.

Courses required for the minor (15 credits):

- HS 3410 - Integrative Holistic Health (3)
- HS 4430 - Modalities for Healing (3)
- HS 4440 - Healing Traditions (3)
- HS 4450 - Laughter as Therapeutic Modality (3)
- HS 4460 - Mindfulness (3)

Choose at least 3 credits of electives from the following courses:

- AN 3220 - Medical Anthropology (4)
- EXS 4650 - Yoga Therapy (3)
- HS 2150 - Stress Management (3)
- HS 3400 - Contemporary Topics in Health (3)
- HS 3430 - Sociology of Health and Medicine (4) or WHP 3700 - Culture, Ethnicity and Well-being (3)
- HS 4900 - Special Topics (2 TO 4)
- HS 4995 - Directed Study (1 TO 4)
- NTR 3210 - Herbs Supplements & Nutrition (3)
- PH 4650 - Social Determinants of Health (4)
- PSY 3180 - Biological Psychology (4)
- PSY 3450 - Health Psychology (4)

InterProfessional Education

InterProfessional Education

According to the Centre for the Advancement of Interprofessional Education in the United Kingdom and the World Health Organization, "interprofessional education occurs when two or more professions (students, residents and health workers) learn with, about, and from each other to enable effective collaboration and improve health outcomes."

CHEER - Community Health Engagement and Empowerment Research Lab

The Community Health Engagement and Empowerment Research (CHEER) Lab provides undergraduate students with hands-on training in research skills and opportunities to work on faculty-led research projects from different disciplines within the School of Health Sciences. Undergraduate students will have opportunities to work with community and academic partners, engage in professional networking, and gain valuable experience in the field of health research. These skills and experiences enhance student success in pursuing graduate training and health careers.

Requirements to participate in CHEER Lab

CHEER core curriculum courses

- IPE 1020 - CHEER Lab Research Skills Training (0)
- IPE 3020 - CHEER Lab Research Skills Applications (0)

ECLIPSE - Explorations in Collaborative Leadership and InterProfessional Education Program

The Explorations in Collaborative Leadership and InterProfessional Education (ECLIPSE) program at Oakland University is a novel leadership model designed to foster students' abilities to become leaders within and beyond our communities through diverse, student-centered, collaborative, and interprofessional experiences. The ECLIPSE program offers collaborative leadership and interprofessional education experiences in all majors within the SHS. Students engaged in the program develop the competencies of interprofessional education (communication, values, roles/responsibilities, and teamwork) through: 1) participation in ECLIPSE workshops; 2) reflections on interprofessional experiences in and outside of academic courses; 3) peer mentorship; and 4) a culminating community impact project. As students participate in ECLIPSE activities, mentoring, and other collaborative leadership experiences on and off campus, they submit reflections detailing the knowledge and skills gained through their experiences. Students complete an e-portfolio, documenting their leadership experiences and personal growth over the course of their education at Oakland University.

Requirements to participate in ECLIPSE

Students interested in participating in ECLIPSE must have declared a School of Health Sciences major. Students can become involved in ECLIPSE at any time; however, those nearing the end of their degree should consult with the ECLIPSE Coordinator.

ECLIPSE core curriculum courses

- IPE 1000 - ECLIPSE I (0)
- IPE 1010 - ECLIPSE I A (0)
- IPE 2000 - ECLIPSE II (0)
- IPE 2010 - ECLIPSE II A (0)
- IPE 3000 - ECLIPSE III (0)
- IPE 3010 - ECLIPSE III A (0)
- IPE 4000 - ECLIPSE IV (0)
- IPE 4010 - ECLIPSE IV A (0)
- IPE 4500 - InterProfessional Education (3)
- IPE 4900 - Special Topics (0)

Nutrition and Health Minor

Department Website

A minor in Nutrition and Health is available to students in any degree program. A minimum of 19 credits are required for the minor including 17 core credits and 2 elective credits. A minimum grade of C is required in each course for the minor.

Core courses (13 credits):

- NTR 2500 - Human Nutrition and Health (3)
 - NTR 2650 - Nutrition Assessment Methods (3)
 - NTR 4100 - Nutrition and Lifecycles (4)
 - NTR 3120 - Community Nutrition (3) **or** NTR 3140 - Food, Nutrition, and Culture (3) *
- * Courses that satisfy the university general education requirement

Elective courses (minimum of 6 credits):

- BIO 3360 - Organic Farming (4)
- BIO 3361 - Applied Organic Farming (1)
- NTR 2651 - Nutrition Assessment Methods Laboratory (1)
- NTR 2700 - Introduction to Food Science (3)
- NTR 2750 - Introduction to Cooking and Culinary Science (2)
- NTR 2800 - Plant-based Diet Nutrition (3)
- NTR 3210 - Herbs Supplements Nutrition (2)
- NTR 3220 - Eating Disorders (2)
- NTR 3230 - Foodborne Illnesses (2)
- NTR 3250 - Sports Nutrition (3)
- NTR 3260 - Food Politics (2)
- NTR 3300 - Organizational Behavior and Health Care Systems (3)
- NTR 4350 - Nutrient Metabolism (4)

Orthotist and Prosthetist Assistant Studies Minor

Department Website

An 18-credit minor in Orthotist and Prosthetist Assistant Studies is available to students in any major. Students in the minor will take courses from the Orthotist and Prosthetist Assistant Studies, which is part of the Bachelor of Exercise Science Degree. The purpose of this minor is to gain first-hand knowledge and experience of this meaningful field of practice through coursework, as a means of supplementing the student's home major field (such as science, engineering, biology, social work).

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Orthotist and Prosthetist Assistant Studies

Core Courses required for the minor (11 credits)

The following courses **MUST** be taken with a minimum grade of B-

- CDS 2100 - Medical Terminology **(1)**
 - EXS 3510 - Clinical Assessments **(3) ***
 - EXS 3520 - Material Characteristics **(2) ****
 - EXS 3535 - Patient & Practice Management **(1) *****
 - EXS 3550 - Neuropathic Disorders **(1)**
 - EXS 3540 - Fit, Function and Modifications **(3)**
- * Pre-req** BIO 2100, BIO 2600
****Pre-req** PHY 1010, PHY 1100
***** Pre-req** PSY 1000

Additional Courses in Orthotist and Prosthetist Assistant Studies (5 credits)

Upon completion of the core, students must take a minimum of 5 credits with a minimum grade of B-

- EXS 4510 - Spinal Orthotics **(2)**
- EXS 4520 - Upper Extremity Orthotics **(2)**
- EXS 4530 - Lower Extremity Orthotics **(3)**
- EXS 4540 - Upper Extremity Prosthetics **(2)**
- EXS 4550 - Lower Extremity Prosthetics **(3)**

Additional Information

Students who are taking the minor will not be eligible for the orthotics and prosthetics certification exam or patient contact.

Recreation Leadership Minor

Department Website

This minor is designed to provide students with skills, adaptability, and creativity for working in a variety of recreational settings. The curriculum has been carefully designed to include theory and practical application. A minimum of 16 credit hours is required for a minor in Recreation Leadership.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Recreation Leadership

- HRD 3510 - Principles of Leadership **(4) or** COM 3402 - Communication in Leadership **(4)**
- PH 3500 - Public Health Program Implementation **(4) ***
- WHP 3300 - Foundations of Recreation for All **(4)**
- WHP 3600 - Wellness Facilitation **(4) ***

*HS 2000 and HS 2050 are prerequisites for PH 3500 and WHP 3600, WRT 1060 is a prerequisite for PH 3500

Grade point policy

Recreation Leadership minors must achieve minimum course grades of C+ in all required minor courses. If a student earns a final course grade below the minimum, they should meet with their academic adviser and must repeat the course in which the unsatisfactory grade was earned.

Wellness and Health Promotion Minor

Department Website

Special offerings for each semester may be found in the Schedule of Classes.

The following courses are required for the minor in Wellness and Health Promotion

- WHP 3010 - Equitable Wellness for Diverse Populations **(4)**
- WHP 3600 - Wellness Facilitation **(4)**
- WHP 4000 - Assessment and Interventions in Wellness **(4)**
- WHP 4030 - Laboratory in Assessment and Interventions **(4)**

Note

HS 2000 is a prerequisite for WHP 4000 and WHP 4030.

School of Business Administration

School Website

The School of Business Administration (SBA) undergraduate programs enable students to combine the intensive study of a functional area of business (i.e., accounting, actuarial science, finance, human resource management, management information systems, marketing or operations management) or business economics with a broad background in management. Alternatively, students can focus on economics, the fundamental discipline behind business processes. In these programs, a strong foundation in liberal arts is combined with a rigorous education in written and oral communications and in problem definition, analysis and resolution. This combination produces graduates who can think analytically, communicate effectively and work cooperatively with others of similar or diverse backgrounds in both domestic and international environments. Graduates of these programs are prepared to handle the increasingly complex and changing problems faced by managers in profit-oriented enterprises and not-for-profit organizations, both public and private.

Accreditation of School of Business Administration

The SBA is accredited, on both the undergraduate and the graduate levels, by AACSB International (The Association to Advance Collegiate Schools of Business), the premier business school accreditation agency. In addition, the accounting program has achieved the separate AACSB accounting accreditation.

Admission Criteria for School of Business Administration

Admission to major standing is selective. The minimum requirements for consideration are:

1. Student's admissibility to and retention in the university;
2. Completion of the writing requirement;
3. A minimum grade-point average of 2.6 in all courses taken at Oakland University (with a minimum of six credits completed at Oakland University);
4. A minimum grade of C in each of the pre-core courses or their equivalents
5. Satisfactory completion of SBC1990 and SBC2990;
6. Submission of an "Application for Major Standing" for the desired major

A student is classified as pre-business upon admission to Oakland University if they have a cumulative GPA of 2.80 or above and four years of college preparatory math. Transfer students are classified as pre-business if they have a cumulative transfer GPA of 2.80 or above and math through intermediate algebra. A student is classified as Direct admit into their business major if they have a high school cumulative GPA of 3.7 or higher. All other students are classified as undecided business and these students cannot register for most 3000- and 4000-level courses until they obtain pre-business or major standing status within the SBA. Undecided business students may register for all SBA pre-core courses and general education requirements.

To maintain pre-business status before obtaining major standing within the SBA, an OU student must maintain a cumulative GPA set by the SBA. Any pre-business student (SBA students not yet having major standing) who does not maintain an OU cumulative GPA (as set by the SBA) at the end of any term is classified as an undecided business student. The GPA set by the SBA for pre-business status is 2.6.

All students who are not business majors in the School of Business Administration, whether they have applied for a minor or not, are limited to no more than 25 percent of their total degree credits required for their degree in business courses (usually 32 credits). The maximum of 25 percent of total degree credits includes courses taken at Oakland University and all previous colleges. Economics (ECN) courses and QMM2400, QMM2410, QMM4400 and QMM4520 are excluded from this requirement. Therefore, students from majors outside the business administration program, including economics majors in either the School of Business Administration or the College of Arts and Sciences, may not earn more than 25 percent of their required total degree credits in transfer plus Oakland credits in ACC, FIN, MGT, MIS, MKT, ORG, POM or QMM courses (excluding those noted above). Economics majors and students from other majors at Oakland University may take 1000-and-2000 level SBA courses as long as they have all the prerequisite courses with the required grades. Economics majors and students from non-business majors at Oakland University must have an approved university concentration/minor authorization form to take 3000-and-4000 level SBA courses which have the prerequisite of major standing.

All transfer courses from another institution need to be a minimum of three credits for the SBA to evaluate them for transfer credit for pre-core, core, and major courses and must have a minimum grade of C to meet the requirement.

School/College Honors

School honors are awarded by the SBA to graduating students who have completed a minimum of 32 credits in SBA courses with a minimum GPA of 3.33 in courses offered in the school.

Bachelor of Arts

Economics, B.A.

Department Website

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

General Education Requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Requirements for the liberal arts major in economics, B.A. program

The program leading to a Bachelor of Arts degree in economics includes cognate courses in mathematics, statistics and computers and required economics courses and economics electives, as listed below. Students who have taken ECN 1500 or ECN 1600 before ECN 2010 or ECN 2020 (or ECN 2000) and who subsequently become economics majors, should talk to the department chairperson. The economics major must complete each of the cognate, required and elective courses with a grade of C or better:

Cognate courses

- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 0661 - Elementary Algebra **(4)** (if required by ACT or SAT scores)
- MTH 0662 - Intermediate Algebra **(4)** (if required by ACT or SAT scores)
- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)**
- MTH 1222 - Calculus for the Social Sciences **(4)** or MTH 1554 - Calculus I **(4)**
- QMM 2400 - Statistical Methods for Business I **(3)** (or STA 2220 or STA 2226) and QMM 2410 - Statistical Methods for Business II *(Students who have taken STA 2220 or STA 2226 under a previous catalog may use these courses to satisfy the QMM 2400 requirement)*

Required courses

- ECN 2010 - Principles of Microeconomics **(4)** **and** ECN 2020 - Principles of Global Macroeconomics **(4)** **or** ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 3020 - Intermediate Macroeconomics **(3)**
- ECN 3030 - Managerial Economics **(3)**
- ECN 3040 - Consumer and Welfare Economics **(3)**
- ECN 4180 - Seminar in Economic Policy **(3)**

Economics major electives

Choose five economics electives at the 3000 level or above. No more than 3 credits of ECN 4996, ECN 3800, or ECN 4900 may be counted as electives. Students taking ECN 1500 or ECN 1600 before ECN 2000, ECN 2010 or ECN 2020, and who subsequently become economics majors, should talk to the department chairperson.

Note: Students must meet any course prerequisites before taking these courses. All cognate, required and major elective courses must be completed with a grade of C or better.

Bachelor of Science

Actuarial Science, B.S., Economics

Department Website

Students must complete the Oakland University General Education Requirements, General College of Arts and Sciences Requirements, College of Arts and Sciences College Exploratory Requirement, Major Requirements, and an appropriate number of free elective classes to meet the overall credit requirement for the degree (in most cases a minimum of 124; some degrees may require a greater number).

As a general rule, no more than eight credits of coursework used to satisfy one major, minor or concentration may be applied toward another, but exceptions to this rule may be allowed with the written approval of the program coordinators.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

General Education Requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Requirements for the liberal arts major in actuarial science, B.S. program

Because an actuary needs a blend of mathematics, economics, statistics, and finance, this major is offered jointly by the Department of Mathematics and Statistics and the Department of Economics. However, the major in actuarial science differs significantly from the other majors offered by these two departments because it (1) prepares students for jobs in actuarial science as well as provides them with the educational background necessary to pursue an advanced degree in economics, mathematics, statistics, or business administration, (2) integrates two distinctly different disciplines, thereby providing students with a breadth of knowledge that is needed in our fast changing world, and (3) provides students with the analytical and reasoning skills to successfully complete the first two exams in actuarial science offered by the Society of Actuaries.

To earn the Bachelor of Science degree with a major in actuarial science, students must complete a minimum of 124 credits. All required and cognate courses must be completed with a minimum grade of a C.

1. Complete Basic Mathematics Requirements

- MTH 1554 - Calculus I (4)
- MTH 1555 - Calculus II (4)
- MTH 2554 - Multivariable Calculus (4)
- MTH 2775 - Linear Algebra (4)

2. Complete Probability Requirements

- ACS 3000 - Foundations of Probability and Calculus (1) **(unless the student has earned a grade of at least B+ in MTH 2554 - Multivariable Calculus (4) or permission of the chief undergraduate adviser)**

- STA 2226 - Applied Probability and Statistics (4)
- STA 4113 - Introduction to Mathematical Statistics I (4)

3. Complete Economics Requirements

- ECN 2010 - Principles of Microeconomics (4)
- ECN 2020 - Principles of Global Macroeconomics (4) **or** ECN 2000 - Principles of Macroeconomics (4)
- ECN 3020 - Intermediate Macroeconomics (3) **or** ECN 3210 - Financial Markets and Economy (3)
(Students under a previous catalog who have taken ECN 3210 may use this course as a substitute for ECN 3020)
- ECN 3030 - Managerial Economics (3) **or** ECN 3810 - Mathematical Analysis for Economists (3) (Students under a previous catalog who have taken ECN 3810 may use this course as a substitute for ECN 3030)

4. Complete Statistics Requirement

- QMM 2410 - Statistical Methods for Business II (3) **or** STA 4330 - Time Series I (4) **or** STA 4114 - Introduction to Mathematical Statistics II (4)
(Students under a previous catalog who have taken ECN 4060 or STA 4114 or STA 4330 may use these courses as a substitute for QMM 2410)

5. Complete Accounting and Finance Requirements

- ACC 2000 - Financial Accounting (4)
- FIN 3550 - Finance for Actuarial Science (4) **or** (FIN 3220 - Managerial Finance I (3) and FIN 3720 - Managerial Finance II (3)) (Students under a previous catalog who have taken FIN 3550 may use this course as a substitute for FIN 3220)

6. Complete Regression Requirement

- ECN 4050 - Econometrics (3) **or** STA 4002 - Applied Linear Models I (4)

7. Complete Database and Programming Requirements

- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- MIS 4460 - Business Analytics (3)

8. Complete Additional Mathematics-Statistics Requirement

- APM 2559 - Introduction to Differential Equations (4) **or** STA 4225 - Stochastic Processes I (4) **or** APM 4334 - Applied Numerical Methods: Matrix Methods (4)
(Students under a previous catalog who have taken APM 2559 may use this course as an elective choice)

9. Complete Financial Mathematics Requirement

- ACS 4550 - Financial Mathematics (3)

10. Complete Financial Derivatives Requirement

- ACS 4660 - Financial Economics (3) or FIN 4250 - Financial Derivatives (3) (Students under a previous catalog can use ACS 4660 to satisfy the Financial Derivatives requirement)

11. Complete Cognate Courses

- WRT 3082 - Business Writing (4)
- COM 2000 - Public Speaking (4) or COM 2403 - Group Dynamics and Communication (4)

12. Complete ACHIEVE courses

- SBC 1990 - ACHIEVE I (0) (to be taken during the freshman year or first year as an actuarial science major)
- SBC 2990 - ACHIEVE II (0) (to be taken during the fall semester of the sophomore year or the second semester as an actuarial science major)
- ACS 3990 - ACHIEVE III Actuarial Sciences (0) (to be taken during the second semester of the sophomore year or the third semester as an actuarial science major)

13. Earn a minimum grade of C in all courses applied to the major including cognate courses for the major.

Business Administration, Accounting, B.S.

Department Website

The Accounting major will prepare students for careers in public accounting, industry and government. Accounting professionals are individuals capable of doing more than maintaining sets of accounting records as they focus on analyzing and measuring business activity, processing that data into reports and communicating the information to decision makers. Accountants apply their skills in areas such as auditing, cost management, financial analysis, information systems, management, policy and taxation. Accounting is often the pathway to top management of a corporation.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Accounting, B.S.

Students seeking the Bachelor of Science degree in Accounting must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** **or** COM 2403 - Group Dynamics and Communication **(4)** **or** COM 3401 - Communication in Organizations **(4)** **or** COM 3402 - Communication in Leadership **(4)** **or** COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** **or** ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** **or** MTH 1441 - Precalculus **(4)** **or** MTH 1331 - College Algebra **(4)**
- QMM 2400 - Statistical Methods for Business I **(3)** **or** STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** **or** STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** **or** ENG 3110 - Advanced Critical Writing **(4)**

Accounting required courses

- ACC 3990 - ACHIEVE III - Accounting **(0)**
- ACC 4001 - Intermediate Financial Accounting I **(3)**
- ACC 4002 - Intermediate Financial Accounting II **(3)**
- ACC 4003 - Managerial and Cost Accounting II **(3)**
- ACC 4008 - Introduction to Data Analytics for Accounting **(3)**
- ACC 4180 - Accounting Information Systems: Planning and Analysis **(3)**

Complete three Accounting (ACC) elective courses

- ACC 4150 - Principles of Taxation **(3)** **or** ACC 5150 - Introduction to Taxation **(3)**
- ACC 4220 - Auditing **(3)** **or** ACC 5220 - Auditing **(3)**

- ACC 4240 - Government and Not-for-Profit Accounting (3) or ACC 5240 - Government and Not-for-Profit Accounting (3)
- ACC 4310 - Advanced Financial Accounting (3) or ACC 5310 - Advanced Financial Accounting (3)
- ACC 4900 - Special Topics in Accounting (3)
- ACC 4996 - Independent Study (1 TO 3)
- ACC 5050* - Business Law for Accounting and Finance (3)
- ACC 5210* - Federal Income Tax II (3)
- ACC 5260* - AIS: Audit and Control (3)
- ACC 5500* - Tax Research, Planning, and Administration (3)

*Course may be counted as an Accounting elective with the permission of the Faculty Director of Accounting Programs or Accounting and Finance Department Chair

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Because of specific examination requirements, students who plan to take a professional accounting examination (CPA, CMA or CIA) should discuss their options with a faculty major adviser before enrolling in 4000-level accounting courses.

Business Administration, Business Actuarial Science, B.S.

Department Website

With a blend of mathematics, economics, statistics, and finance, an Actuarial Science major positions graduates to become experts in evaluating the likelihood of undesirable events and decreasing their impact. The program prepares students for jobs in the field, as well as provides the educational background to pursue an advanced degree in economics, mathematics, statistics, or business administration.

Actuarial science is a discipline in which complex data sets are used to analyze risk probabilities and their associated costs. Corporations rely on actuarial risk evaluation to frame their strategic management decisions. Actuaries are employed by the insurance industry, corporations, and the government. To become an actuary, a strong background in statistics, economics, and finance is required.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Business Actuarial Science, B.S.

Students seeking the Bachelor of Science degree in Business Actuarial Science must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)** or MTH 1331 - College Algebra **(4)**
- MTH 1222 - Calculus for the Social Sciences **(4)** or MTH 1554 - Calculus I **(4)**
- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** or ENG 3110 - Advanced Critical Writing **(4)**

Business Actuarial Science courses

- MTH 1555 - Calculus II (4)
- MTH 2554 - Multivariable Calculus (4)
- MTH 2775 - Linear Algebra (4)
- ACS 3000 - Foundations of Probability and Calculus (1)
(unless the student has earned a grade of at least B+ in MTH 2554 - Multivariable Calculus (4) or permission of the chief undergraduate actuarial adviser)
- ECN 3020 - Intermediate Macroeconomics (3) or ECN 3210 - Financial Markets and Economy (3)
- ECN 3500 - Insurance and Risk Management (3)
- ECN 4050 - Econometrics (3)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- MIS 3140 - Business Database Systems (3)
- MIS 4460 - Business Analytics (3)
- APM 2559 - Introduction to Differential Equations (4) or APM 4334 - Applied Numerical Methods: Matrix Methods (4) or STA 4225 - Stochastic Processes I
- ACS 4550 - Financial Mathematics (3)
- ACS 4660 - Financial Economics (3) or FIN 4250 - Financial Derivatives (3)
- ACS 3990 - ACHIEVE III Actuarial Sciences (0)

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete least 31 credits must be in courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Certificates of additional majors are permitted in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Business Administration, Business Economics, B.S.

Department Website

An Economics degree provides students with a wide range of transferable skills to study choices and decisions made by individuals, businesses, and nations. It is a flexible choice for students seeking a rigorous, well-respected, and versatile major without specializing in a narrowly defined area too early. Popular career choices for economics students include: banking, finance, insurance, management, consulting, and government. An education in Economics also provides an excellent preparation for graduate studies in law, medicine, business, public administration, environmental studies, and economics.

The BS in Business Economics exposes students to multiple business areas and is an excellent choice for students looking to acquire analytical skills vital for business environments or considering an MBA program after graduation.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Business Economics, B.S.

Students seeking the Bachelor of Science degree in Business Economics must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)** or MTH 1331 - College Algebra **(4)**
- MTH 1222 - Calculus for the Social Sciences **(4)** or MTH 1554 - Calculus I **(4)**
- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**

- POM 3430 - Operations Management (3)
- WRT 3082 - Business Writing (4) or ENG 3110 - Advanced Critical Writing (4)

Economics (ECN) required courses

- ECN 3020 - Intermediate Macroeconomics (3)
- ECN 3040 - Consumer and Welfare Economics (3)
- ECN 3990 - ACHIEVE III - Business Economics (0)
- ECN 4050 - Econometrics (3)
- ECN 4180 - Seminar in Economic Policy (3)

Complete three Economics elective courses

- ECN 3060 - Applied Time Series Analysis in Business (3)
- ECN 3070 - Using "BIG" Data for Economic Problems (3)
- ECN 3090 - Introduction to Public Finance (3)
- ECN 3100 - Economics of Energy and the Environment (3)
- ECN 3150 - Economics of Gender and Ethnicity (3)
- ECN 3210 - Financial Markets and Economy (3)
- ECN 3260 - International Economic Development (3)
- ECN 3330 - History of Economic Thought (3)
- ECN 3380 - Economics of Human Resources (3)
- ECN 3500 - Insurance and Risk Management (3)
- ECN 3670 - Economics of Health Care (3)
- ECN 3730 - International Trade (3)
- ECN 3740 - Economics of Intl Finance (3)
- ECN 3780 - Economic Analysis of Law (3)
- ECN 3800 - Topics in Economics (3)
- ECN 3810 - Mathematical Analysis for Economists (3)
- ECN 3850 - Economics of Industries (3)
- ECN 4090 - Urban and Regional Economics (3)
- ECN 4210 - Monetary Economics (3)
- ECN 4560 - Public Finance (3)
- ECN 4900 - Special Topics in Economics (3)

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University;

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be

repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Business Administration, Finance, B.S.

Department Website

By focusing on managing current and future figures of a business or organization, finance professionals are often responsible for predicting and analyzing the potential for profit and growth, assessing resources, utilizing statistics and reports. Finance can be a good choice for people who are inquisitive, ambitious problem solvers. A bachelor's degree in finance is a great starting point for careers in financial services, across business, banking and consultancy sectors.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Finance, B.S.

Students seeking the Bachelor of Science degree in Finance must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting (4)
- ACC 2100 - Managerial and Cost Accounting I (4)
- COM 2000 - Public Speaking (4) **or** COM 2403 - Group Dynamics and Communication (4) **or** COM 3401 - Communication in Organizations (4) **or** COM 3403 - Interpersonal Conflict (4)
- ECN 2020 - Principles of Global Macroeconomics (4) **or** ECN 2000 - Principles of Macroeconomics (4)
- ECN 2010 - Principles of Microeconomics (4)
- MIS 1000 - Business Problem Solving with Information Technology (3)
- MTH 1221 - Linear Programming Elementary Functions (4) **or** MTH 1441 - Precalculus (4) **or** MTH 1331 - College Algebra (4)
- QMM 2400 - Statistical Methods for Business I (3) **or** STA 2220 - Introduction to Statistical Concepts and Reasoning (4) **or** STA 2226 - Applied Probability and Statistics (4)
- QMM 2410 - Statistical Methods for Business II (3)
- SBC 1990 - ACHIEVE I (0)
- SBC 2990 - ACHIEVE II (0)

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics (3)
- FIN 3220 - Managerial Finance I (3)
- MGT 3500 - Legal Environment of Business (3)
- MGT 4350 - Management Strategies and Policies (3)
- MIS 3000 - Management Information Systems (3)
- MKT 3020 - Marketing (3)
- ORG 3300 - Introduction to Organizational Behavior (3)
- ORG 3310 - Introduction to the Management of Human Resources (3)
- POM 3430 - Operations Management (3)
- WRT 3082 - Business Writing (4) or ENG 3110 - Advanced Critical Writing (4)

Finance (FIN) required courses

- ACC 3010 - Financial Reporting and Analysis (3) *
 - FIN 3600 - Investment Analysis (3)
 - FIN 3680 - Financial Modeling (3)
 - FIN 3720 - Managerial Finance II (3)
 - FIN 3990 - ACHIEVE III - Finance (0)
- *In lieu of ACC 3010 (3), students may substitute both ((ACC 3100 (3) and ACC 3110 (3)) or (ACC 4001 (3) and ACC 4002 (3))).

Complete three Finance elective courses

- FIN 4180 - Financial Markets and Institutions (3)
 - FIN 4190 - International Financial Management (3)
 - FIN 4200 - Real Estate Investment Analysis (3)
 - FIN 4250 - Financial Derivatives (3)
 - FIN 4300 - Mergers and Acquisitions and Corporate Restructuring (3)
 - FIN 4360 - Managing Investment Funds (3)
 - FIN 4600 - Investment Portfolio Management (3)
 - FIN 4900 - Special Topics in Finance (3)
- *ACC 3200 (3) or ACC 4003 (3) or ACC 3500 (3) or ACC 4150 (3) may be substituted for one finance elective.

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

If an Actuarial Science student wants to switch to a Finance major, they can use FIN 3550 to satisfy the FIN 3220 requirement, but will still need to take FIN 3720. If a Finance major student wants to switch to an Actuarial Science major, they will need to use both FIN 3220 and FIN 3720 to satisfy the FIN 3550 requirement.

Business Administration, Finance, B.S., Specialization in Wealth Management

Department Website

By focusing on managing current and future figures of a business or organization, finance professionals are often responsible for predicting and analyzing the potential for profit and growth, assessing resources, utilizing statistics and reports. Finance can be a good choice for people who are inquisitive, ambitious problem solvers. A bachelor's degree in finance is a great starting point for careers in financial services, across business, banking and consultancy sectors.

Increase your scope of knowledge by adding the Wealth Management Specialization to your degree. This specialization focuses on preparing graduates to offer financial services in the growing area of high-net-worth individuals, including capital gains planning, estate planning and risk management.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Finance, B.S., Specialization in Wealth Management

Students seeking the Bachelor of Science degree in Finance, Wealth Management specialization must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**

- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** **or** MTH 1441 - Precalculus **(4)** **or** MTH 1331 - College Algebra **(4)**
- QMM 2400 - Statistical Methods for Business I **(3)** **or** STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** **or** STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** **or** ENG 3110 - Advanced Critical Writing **(4)**

Finance (FIN) required courses

- ACC 3010 - Financial Reporting and Analysis **(3)** *
 - ACC 4150 - Principles of Taxation **(3)**
 - FIN 3600 - Investment Analysis **(3)**
 - FIN 3680 - Financial Modeling **(3)**
 - FIN 3720 - Managerial Finance II **(3)**
 - FIN 3990 - ACHIEVE III - Finance **(0)**
 - FIN 4779 - Wealth Management & Tax Planning **(3)**
- * In lieu of ACC 3010 (3), students may substitute ((ACC 3100 (3) and ACC 3110 (3)) or (ACC 4001 (3) and ACC 4002 (3))

Complete One Finance (FIN) elective courses

- FIN 4180 - Financial Markets and Institutions **(3)**
- FIN 4250 - Financial Derivatives **(3)**
- FIN 4360 - Managing Investment Funds **(3)**
- FIN 4600 - Investment Portfolio Management **(3)**
- FIN 4900 - Special Topics in Finance **(3)**

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

If an Actuarial Science student wants to switch to a Finance major, they can use FIN 3550 to satisfy the FIN 3220 requirement, but will still need to take FIN 3720. If a Finance major student wants to switch to an Actuarial Science major, they will need to use both FIN 3220 and FIN 3720 to satisfy the FIN 3550 requirement.

Business Administration, General Management, B.S.

Department Website

The purpose of the general management major is to enable a student to choose a variety of management courses with the greatest flexibility (keeping in mind that core course requirements are the same for all majors). Substantial numbers of employers are looking for broadly educated students at the Bachelor's degree level, and many students prefer to have a general business education early in their careers.

Special offerings for each semester may be found in the Schedule of Classes.

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Requirements for the major in General Management, B.S.

Students seeking the Bachelor of Science degree in General Management must complete a minimum of 120 credits including the following requirements:

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3402 - Communication in Leadership **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**

- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** **or** MTH 1331 - College Algebra **(4)** **or** MTH 1441 - Precalculus **(4)** *
- QMM 2400 - Statistical Methods for Business I **(3)** **or** STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** **or** STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** **or** ENG 3110 - Advanced Critical Writing **(4)**

General Management required courses

- MGT 3990 - ACHIEVE III - General Management **(0)**
- ORG 4310 - Leadership and Group Performance **(4)**

Complete 11 credits of General Management elective courses

The electives may be chosen from any area within the SBA (courses beginning with ACC, ECN, ENT, FIN, MGT, MIS, MKT, ORG, POM or QMM) and must be chosen from courses numbered 3000 or higher. At least six credits must be at the 4000 level which includes ORG 4310. A grade of C or better must be achieved in each prerequisite for a general management elective course before a general management major may begin work in that general management elective course. No more than four credits of independent study (MGT 4996) may be used to meet the major elective requirement.

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Students may not earn a double major in general management and another major in the School of Business Administration.

Business Administration, Human Resource Management, B.S.

Department Website

The major in Human Resource Management develops the skills needed to administer the personnel functions of organizations. It is designed primarily for students who intend to pursue careers in administration, personnel management, labor relations or wherever the management of people at work is a central concern. Emphasis is placed on developing an intensive understanding of the concepts and techniques needed to acquire, develop and utilize an organization's human resources. The program includes broad coverage of such topics as personnel psychology, personnel administration and labor/management relations, in addition to providing basic knowledge of organizational behavior.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Human Resource Management, B.S.

Students seeking the Bachelor of Science degree in Human Resource Management must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)** or MTH 1331 - College Algebra **(4)**

- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** or ENG 3110 - Advanced Critical Writing **(4)**

Human Resource Management required courses

- ORG 3990 - ACHIEVE III - Human Resource Management (HRME) **(0)**
- ORG 4300 - Organizational Research Methods **(4)**
- ORG 4340 - Advanced Human Resources Management **(4)**
- ORG 4600 - Compensation and Benefits **(4)**

Human Resource Management elective courses - choose two

- ECN 3380 - Economics of Human Resources **(3)**
- ORG 4310 - Leadership and Group Performance **(4)**
- ORG 4320 - Motivation and Work Behavior **(4)**
- ORG 4330 - Labor/Management Relations **(4)**
- ORG 4700 - International Organizational Behavior and Human Resources Management **(4)**
- ORG 4900 - Topics in Organizational Management **(1 TO 4)**
- MGT 4900 - Seminar: Current Business Topics **(1 TO 4)**
- PS 3325 - Public Sector Human Resource Management **(4)**

*At least one elective course must be a 4000 level ORG course

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided

business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

In addition to the course requirements listed above, students interested in pursuing the human resource management (HRM) major must also complete the Human Resource Management Experience (HRME) requirement which will satisfy the ORG 3990 requirement. The options for this requirement are described below:

Internship - HRME contract

Students must receive HRM faculty adviser approval prior to beginning the work experience .

For students who would like to substitute their current or recent work experience, the student must complete the contract for the appropriate job and schedule a meeting with the HRM major adviser for approval. Additional support may be required when using previous experience to fulfill this requirement.

The student's work experience must meet the minimum 280 contact hours requirement.

Exit interview

Upon completion of the internship or equivalent experience, the student must submit written answers to the specified exit interview questions to the major adviser.

Students must also have their internship supervisor submit a letter on company letterhead to the HRM major adviser stating the following: hours worked, time period (e.g. months/year), and basic job duties.

Upon documentation of the exit interview, written documentation of the completion of the requirement will be provided to the student and the Undergraduate Advising Office within two weeks.

Portfolio Project

Information concerning this option is available from the HRM Major Adviser.

These items represent new work that represents an HRM skill set. Once the student submits all required aspects of the project to the HRM Major Adviser, written documentation of the completion of the requirement will be provided to the student and the Undergraduate Advising Office within two weeks.

Business Administration, Management Information Systems, B.S.

Department Website

Helping organizations harness ever-changing technology and the data it provides to improve business operations and outcomes is the heart of a management information systems (MIS) career. An integrative, cross-disciplinary field, MIS experts are the bridge

between business needs and technology. With an emphasis on finding solutions, MIS focuses on applying information technology to business problems.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Management and Information Systems, B.S.

Students seeking the Bachelor of Science degree in Management Information Systems must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** **or** COM 2403 - Group Dynamics and Communication **(4)** **or** COM 3401 - Communication in Organizations **(4)** **or** COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** **or** ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** **or** MTH 1441 - Precalculus **(4)** **or** MTH 1331 - College Algebra **(4)**
- QMM 2400 - Statistical Methods for Business I **(3)** **or** STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** **or** STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**

- MKT 3020 - Marketing (3)
- ORG 3300 - Introduction to Organizational Behavior (3)
- ORG 3310 - Introduction to the Management of Human Resources (3)
- POM 3430 - Operations Management (3)
- WRT 3082 - Business Writing (4) or ENG 3110 - Advanced Critical Writing (4)

Management Information System required courses

- MIS 3050 - Information Technology Foundations (3)
- MIS 3140 - Business Database Systems (3)
- MIS 3990 - ACHIEVE III - Management Information Systems (0)
- MIS 4050 - Business Systems Analysis and Design (3) or MIS 5050 Systems Analysis and Design (3)
- MIS 4060 - Managing Information Systems Projects (3) or MIS 5060 Managing Information Systems Projects (3)

Complete three Management Information System elective courses

- MIS 4130 - Networks (3)
- MIS 4140 - Information Security Lab (3)
- MIS 4170 - Practical Cyber Security Fundamentals (3) or MIS 5170 Practical Cyber Security Fundamentals (3)
- MIS 4180 - IS Risk Analysis and Security Controls Development (3) or MIS 5180 IS Risk Analysis and Security Controls Development (3)
- MIS 4200 - Electronic Commerce (3)
- MIS 4220 - Business Object Development (3)
- MIS 4240 - Business Application Architecture (3)
- MIS 4260 - Business Application Technology (3)
- MIS 4410 - Operations Analytics (3)
- MIS 4460 - Business Analytics (3) or MIS 5460 Business Analytics (3)
- MIS 4470 - Practical Computing for Data Analytics (3) or MIS 5470 - Practical Computing for Data Analytics (3)
- MIS 4500 - Web Analytics (3)
- MIS 4560 - Introduction to Data Science (3) or MIS 5560 Introduction to Data Science (3)
- MIS 4600 - Deep Learning and Text Analytics (3)
- MIS 4700 - IS Security (3)
- MIS 4750 - Mobile Security and Secure Application Development (3)
- MIS 4900 - Special Topics in MIS (3)
- MIS 5630 - Networks (3)¹
- MIS 5640 - Network Management (3)¹

Some 5000-level courses can be taken by undergraduate students if they are part of the Combined Bachelor/Masters in Information Technology Management Program. Click here for further details - BS/MSITM.

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided

business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Business Administration, Management Information Systems, B.S., Specialization in Business Analytics

Department Website

The Business Analytics Specialization focuses on quantitative techniques and information technologies for supporting managerial decision making in business. Analytics includes creative use of large (and not so large) datasets, statistical analysis, data visualization, predictive analytics, simulation, data preparation and cleaning, data warehousing and business intelligence.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Management Information Systems, B.S., Specialization in Business Analytics

Students seeking the Bachelor of Science degree in Management Information Systems, Business Analytics Specialization must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**

- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)** or MTH 1331 - College Algebra **(4)**
- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** or ENG 3110 - Advanced Critical Writing **(4)**

Management Information System required courses

- MIS 3050 - Information Technology Foundations **(3)**
- MIS 3140 - Business Database Systems **(3)**
- MIS 3990 - ACHIEVE III - Management Information Systems **(0)**
- MIS 4050 - Business Systems Analysis and Design **(3)** or MIS 5050 Business Systems Analysis and Design **(3)**
- MIS 4060 - Managing Information Systems Projects **(3)** or MIS 5060 Managing Information Systems Projects **(3)**
- MIS 4460 - Business Analytics **(3)** or MIS 5460 Business Analytics **(3)**
- MIS 4560 - Introduction to Data Science **(3)** or MIS 5560 Introduction to Data Science **(3)**
- MIS 4470 - Practical Computing for Data Analytics **(3)** or MIS 5470 Practical Computing for Data Analytics

*Students are recommended to take both MIS 4560 and MIS 4470. If students take both of these courses, one of them will be counted towards the elective.

Complete one Management Information System elective course

- MIS 4410 - Operations Analytics **(3)**
- MIS 4500 - Web Analytics **(3)**
- MIS 4560 - Introduction to Data Science **(3)** or MIS 5560 - Introduction to Data Science **(3)**
or
- MIS 4470 - Practical Computing for Data Analytics **(3)** or MIS 5470 - Practical Computing for Data Science **(3)**
- MIS 4600 - Deep Learning and Text Analytics **(3)**

- MIS 4900 - Special Topics in MIS (3) (with Specialization Advisor's approval)
- QMM 4400 - Management Science (3)
- QMM 4520 - Forecasting (3)

Some 5000-level courses can be taken by undergraduate students if they are part of the Combined Bachelor/Masters in Business Analytics Program.

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Business Administration, Management Information Systems, B.S., Specialization in Information Security Management

Department Website

The Information Security Management Specialization focuses on protecting organizations' information assets including intellectual property, competitive intelligence, business transaction records, and other strategic, tactical, and operational data. The objective of information security management specialization is to provide complementary knowledge and skills to MIS students to manage the confidentiality, integrity, and availability (CIA) of an organization's information assets.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Management Information Systems, B.S., Specialization in Information Security Management

Students seeking the Bachelor of Science degree in Management Information Systems, Information Security Specialization must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3402 - Communication in Leadership **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)** or MTH 1331 - College Algebra **(4)** *
- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** or ENG 3110 - Advanced Critical Writing **(4)**

Management Information System required courses

- MIS 3050 - Information Technology Foundations **(3)**
- MIS 3140 - Business Database Systems **(3)**
- MIS 3990 - ACHIEVE III - Management Information Systems **(0)**
- MIS 4050 - Business Systems Analysis and Design **(3)** or MIS 5050 Business Systems Analysis and Design **(3)**
- MIS 4060 - Managing Information Systems Projects **(3)** or MIS 5060 Managing Information Systems Projects **(3)**
- MIS 4170 - Practical Cyber Security Fundamentals **(3)** or MIS 5170 Practical Cyber Security Fundamentals **(3)**

- MIS 4180 - IS Risk Analysis and Security Controls Development (3) or **MIS 5180 IS Risk Analysis and Security Controls Development (3)**

Complete one Management Information System elective course

- MIS 4130 - Networks (3)
- MIS 4140 - Information Security Lab (3)
- MIS 4700 - IS Security (3)
- MIS 4750 - Mobile Security and Secure Application Development (3)
- MIS 4900 - Special Topics in MIS (3) (with Specialization Advisor's approval)

Some 5000-level courses can be taken by undergraduate students if they are part of the Combined Bachelor/Masters in Information Technology Management Program. Click to MSITM, Combined B.S./M.S. for further details.

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Business Administration, Marketing, B.S.

Department Website

Marketing involves identifying and satisfying the wants and needs of customers and businesses through exchanges that create value for all parties to the exchange. To do this effectively, marketing develops and maintains customer relationships, and creates a position in the marketplace relative to consumers. The marketing activities involved in bringing products to market include marketing research, product development, pricing, marketing logistics, marketing channel management, wholesaling and retailing, and promotion, including advertising, sales promotion, and personal selling.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in marketing, B.S.

Students seeking the Bachelor of Science degree in Marketing must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3402 - Communication in Leadership **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)** or MTH 1331 - College Algebra **(4)**
- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** or ENG 3110 - Advanced Critical Writing **(4)**

Marketing required courses

- MKT 3990 - ACHIEVE III - Marketing **(0)**
- MKT 4040 - Consumer Behavior **(4)**
- MKT 4050 - Marketing Research **(4)**
- MKT 4530 - Strategic Marketing Management **(4)**

Marketing elective courses - choose three:

- MKT 4060 - Integrated Marketing Communications (3)
- MKT 4100 - Digital Marketing (3)
- MKT 4210 - Distribution Channels Management and Retailing (3)
- MKT 4220 - Marketing Logistics and Supply Chain Management (3)
- MKT 4300 - Professional Selling (3)
- MKT 4500 - International Marketing (3)
- MKT 4550 - Product Management (3)
- MKT 4600 - Entrepreneurial Marketing (3)
- MKT 4700 - Business to Business Marketing (3)
- MKT 4900 - Seminar in Marketing (1 TO 4)

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Business Administration, Operations Management, B.S.

Department Website

Operations management is about getting things done effectively and efficiently in organizations. All organizations have an operations function. Operations managers work in managing manufacturing processes or managing the delivery of a service to a customer. An Operations Management major provides a strong managerial and technical education to students interested in the field including manufacturing planning and control, supply-chain, service, project, process and quality management.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Operations Management, B.S.

Students seeking the Bachelor of Science degree in Operations Management must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **or** COM 2403 - Group Dynamics and Communication **(4)** **or** COM 3401 - Communication in Organizations **(4)** **or** COM 3402 - Communication in Leadership **(4)** **or** COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** **or** ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** **or** MTH 1441 - Precalculus **(4)** **or** MTH 1331 - College Algebra **(4)** *
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- QMM 2400 - Statistical Methods for Business I **(3)** **or** STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** **or** STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** **or** ENG 3110 - Advanced Critical Writing **(4)**

Operations Management required course

- POM 3990 - ACHIEVE III - Operations Management **(0)**

Complete Six Operations Management elective courses

- ACC 4003 - Managerial and Cost Accounting II (3)
- POM 4350 - Management of Service Operations (3)
- POM 4400 - Process Management (3)
- POM 4410 - Operations Analytics (3)
- POM 4420 - Supply Chain Management (3)
- POM 4430 - Operations Planning and Control (3)
- POM 4470 - Procurement and Global Sourcing (3)
- POM 4480 - Project Management (3)
- POM 4600 - Lean Kaizen in Organizations (3)
- QMM 4400 - Management Science (3)
- QMM 4520 - Forecasting (3)

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Business Administration, Operations Management, B.S., Specialization in Lean and Quality Management

Department Website

This specialization focuses on the complementary and interdependent subjects of Lean and Quality Management. This specialization examines strategies pursued in order to attain objectives including productivity enhancement, waste reduction, and quality improvements. The set of courses comprising this specialization emphasize organizational efforts toward a customer-driven philosophy for organization-wide continuous improvement efforts.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Operations Management, B.S., Specialization in Lean and Quality Management

Students seeking the Bachelor of Science degree in Operations Management, Lean and Quality Management Specialization must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** COM 3402 - Communication in Leadership **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)** or MTH 1331 - College Algebra **(4)** *
- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** or ENG 3110 - Advanced Critical Writing **(4)**

Operations Management required courses

- ACC 4003 - Managerial and Cost Accounting II **(3)**
- POM 3990 - ACHIEVE III - Operations Management **(0)**
- POM 4400 - Process Management **(3)**
- POM 4410 - Operations Analytics **(3)**

- POM 4430 - Operations Planning and Control (3)
- POM 4600 - Lean Kaizen in Organizations (3)

Complete One Operations Management elective course

- POM 4350 - Management of Service Operations (3)
- POM 4420 - Supply Chain Management (3)
- POM 4480 - Project Management (3)
- POM 4470 - Procurement and Global Sourcing (3)
- QMM 4400 - Management Science (3)
- QMM 4520 - Forecasting (3)

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Business Administration, Operations Management, B.S., Specialization in Project Management

Department Website

The focus of this specialization centers on the ten knowledge management areas comprising the project management body of knowledge. These ten knowledge management areas include project integration, scope, human resource, time, cost, quality, risk, procurement, communications, and stakeholder management. The set of courses comprising this specialization emphasize the skills and techniques necessary to successfully lead and manage projects.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Operations Management, B.S., Specialization in Project Management

Students seeking the Bachelor of Science degree in Operations Management Project Management Specialization must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3402 - Communication in Leadership **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)** or MTH 1331 - College Algebra **(4)** *
- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** or ENG 3110 - Advanced Critical Writing **(4)**

Operations Management required courses

- ACC 4180 - Accounting Information Systems: Planning and Analysis **(3)**
- ORG 4310 - Leadership and Group Performance **(4)**
- POM 3990 - ACHIEVE III - Operations Management **(0)**
- POM 4410 - Operations Analytics **(3)**

- POM 4470 - Procurement and Global Sourcing (3)
- POM 4480 - Project Management (3)

Complete One Operations Management elective course

- POM 4350 - Management of Service Operations (3)
- POM 4400 - Process Management (3)
- POM 4420 - Supply Chain Management (3)
- POM 4430 - Operations Planning and Control (3)
- POM 4600 - Lean Kaizen in Organizations (3)
- QMM 4400 - Management Science (3)
- QMM 4520 - Forecasting (3)

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Business Administration, Operations Management, B.S., Specialization in Supply Chain Management

Department Website

Most organizations realize that they cannot achieve long-term success if they were to focus on their internal processes only. Thus, an essential feature of SCM is the management of relationships among organizations; which typically have different cultures, goals and strategies. The SCM specialization trains students to manage processes and complex relationships among organizations. Areas covered within this major include planning and design for supply chains (SC), production processes, SC risks, procurement in the traditional and global contexts, distribution in SC and deployment of information technology to facilitate SC operations.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Business Administration, Operations Management, B.S., Specialization in Supply Chain Management

Students seeking the Bachelor of Science degree in Operations Management, Supply Chain Management Specialization must complete a minimum of 120 credits including the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Business Pre-Core required courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- COM 2000 - Public Speaking **(4)** or COM 2403 - Group Dynamics and Communication **(4)** or COM 3401 - Communication in Organizations **(4)** or COM 3402 - Communication in Leadership **(4)** or COM 3403 - Interpersonal Conflict **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)** or ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- MIS 1000 - Business Problem Solving with Information Technology **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** or MTH 1441 - Precalculus **(4)** or MTH 1331 - College Algebra **(4)** *
- MTH 1222 - Calculus for the Social Sciences **(4)** or MTH 1554 - Calculus I **(4)** *
- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- SBC 1990 - ACHIEVE I **(0)**
- SBC 2990 - ACHIEVE II **(0)**

*If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 is not required.

*If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 is not required.

Business Core required courses

- ECN 3030 - Managerial Economics **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MGT 4350 - Management Strategies and Policies **(3)**
- MIS 3000 - Management Information Systems **(3)**
- MKT 3020 - Marketing **(3)**
- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- POM 3430 - Operations Management **(3)**
- WRT 3082 - Business Writing **(4)** or ENG 3110 - Advanced Critical Writing **(4)**

Operations Management required courses

- POM 3990 - ACHIEVE III - Operations Management **(0)**

- POM 4410 - Operations Analytics (3)
- POM 4420 - Supply Chain Management (3)
- POM 4430 - Operations Planning and Control (3)
- POM 4470 - Procurement and Global Sourcing (3)
- MKT 4220 - Marketing Logistics and Supply Chain Management (3)

Complete One Operations Management elective course

- POM 4350 - Management of Service Operations (3)
- POM 4400 - Process Management (3)
- POM 4480 - Project Management (3)
- POM 4600 - Lean Kaizen in Organizations (3)
- QMM 4900 - Special Topics in Quantitative Methods (3)
- QMM 4520 - Forecasting (3)

Additional requirements

Students must complete the core program and the requirements of one of the business majors in the SBA with a minimum grade of C in each of the pre-core, core and major courses. Once admitted to the business program as a pre-business or undecided business student or major, a student must complete all of the remaining business core, major and business minor coursework for the degree at Oakland University.

Students must complete at least 31 credits of courses offered by the School of Business Administration, excluding ECN 1500, ECN 2000 or ECN 2020, ECN 2010, ECN 2100 and QMM 2400 and QMM 2410. Of these 31 credits, at least 12 credits must be in the student's major.

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different. All major courses require a 2.6 GPA or better or major standing to take these courses (excludes Economics and non-SBA major courses).

Economics, B.S.

Department Website

An Economics degree provides students with a wide range of transferable skills to study choices and decisions made by individuals, businesses, and nations. It is a flexible choice for students seeking a rigorous, well-respected, and versatile major without specializing in a narrowly defined area too early. Popular career choices for economics students include: banking, finance, insurance, management, consulting, and government. An education in Economics also provides an excellent preparation for graduate studies in law, medicine, business, public administration, environmental studies, and economics.

This degree provides in-depth knowledge of business methods by offering students a range of business-related courses. It is offered with a great flexibility, as it does not require a set of business core courses. Students seeking the Bachelor of Science degree in Economics must complete a minimum of 120 credits including the following requirements:

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Economics, B.S.

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Required Cognate Courses

- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- CSI 1200 - Introduction to Computing and Programming using Excel **(4)** **or** MIS 1000 - Business Problem Solving with Information Technology **(3)**
- FIN 3220 - Managerial Finance I **(3)**
- MTH 1221 - Linear Programming Elementary Functions **(4)** **or** MTH 1441 - Precalculus **(4)***
- MTH 1222 - Calculus for the Social Sciences **(4)** **or** MTH 1554 - Calculus I **(4)***
- QMM 2400 - Statistical Methods for Business I **(3)** **or** (STA 2220 **or** STA 2226) **and** QMM 2410 - Statistical Methods for Business II **(3)**
- WRT 3082 - Business Writing **(4)**

* If a student places into and completes MTH 1222 or MTH 1554 with the required minimum grade, MTH 1221 or MTH 1441 or MTH 1331 are not required.

* If a student receives transfer credit for MTH 1222 or MTH 1554, MTH 1221 or MTH 1441 or MTH 1331 are not required.

Economics required courses:

- ECN 2010 - Principles of Microeconomics **(4)** **and** ECN 2000 - Principles of Macroeconomics **(4)** **or** ECN 2020 - Principles of Global Macroeconomics **(4)**
- ECN 3020 - Intermediate Macroeconomics **(3)**
- ECN 3030 - Managerial Economics **(3)**
- ECN 3040 - Consumer and Welfare Economics **(3)**
- ECN 4050 - Econometrics **(3)**
- ECN 4180 - Seminar in Economic Policy **(3)**

Complete four Economics elective courses (ECN) at the 3000 level or above

- ECN 4010 cannot count as an elective.
- QMM 4520 can be substituted for an economics elective. No more than three credits in ECN 3800, ECN 4900, or ECN 4996 may be counted as economic electives.

Additional requirements

Students earning an additional major are permitted to do so in all areas except general management. No more than four credits of independent study (4996) courses may be used to meet the major elective requirement. Courses numbered 3800 and 4900 may be repeated for up to eight credits provided the topics are different.

Combined Bachelor/Masters

Accounting, Combined B.S./MAcc (Pending Approvals)

Department Website

The Combined BS/MAcc is a combined bachelor/master degree program that provides high-achieving students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently. It is designed for students who are high academic achievers and creates an integrated learning experience along several knowledge paths. The BS/MAcc program students will be able to earn their master's degree by completing no more than 9 credits of graduate courses (ACC 5150, ACC 5220, and ACC 5240) beyond the undergraduate Accounting major requirements.

Students accepted for the BS/MAcc program must have a minimum overall undergraduate GPA of 3.2. Students may apply to the BS/MAcc Program and be offered deferred admission to the graduate program during their junior year. BS/MAcc applicants may request to waive the GMAT requirement. To be eligible for the waiver, applicants must have a cumulative GPA of 3.0 or higher. To request a waiver, download, complete, and submit the Request to Waive GMAT Form. This form is found under Supplemental Application, School of Business Administration.

It is important that students register for the 5000-level classes that are double counted in order to satisfy the electives requirement for the Accounting major as well as get credit towards the BS/MAcc program. If students take only the 4000-level electives, those courses cannot be counted for the BS/MAcc degree.

Students offered deferred admission will remain classified as undergraduates until they have completed all undergraduate degree requirements. At that time, students who have maintained an overall undergraduate GPA 3.2 and have earned a B or above in the double-counted graduate courses, will be reclassified as a graduate student through Graduate School.

Specific offerings for each semester may be found in the Schedule of Classes.

To be eligible for the Accounting, Combined BS/MAcc option, students must:

1. Complete ACC 2000, ACC 2100, ACC 4001, ACC 4002, ACC 4003, ACC 4008, and ACC 4180.
2. Have a major GPA of 3.2 or above.
3. Apply for and receive delayed admission in the M.S. program and thereby the substitution of graduate classes ACC 5150, ACC 5220, and ACC 5240 in place of ACC 4150, ACC 4220, and ACC 4240.
4. Maintain a minimum 3.2 cumulative GPA to completion of the degree in Accounting, B.S.
5. Students must receive formal delayed admission into the program prior to registering for ACC 5150, ACC 5220, and ACC 5240.

For more information

Contact Donna Free at: free@oakland.edu

For the full MS program requirements visit the Master of Accounting website.

Business Analytics, Combined B.S./M.S.

Department Website

The Combined BS/MS Business Analytics Program (BS/MS) is a combined bachelor/master degree program that provides high-achieving students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently. It is designed for students who are high academic achievers and creates an integrated learning experience along several knowledge paths. The BS/MS program students will be able to earn their master's degree by completing no more than 12 credits of graduate courses (MIS 5160, MIS 5460, MIS 5560 and MIS 5470) beyond the undergraduate MIS major requirements.

Students accepted for the BS/MS program must have a minimum overall undergraduate GPA of 3.2. Students may apply to the BS/MS Program and be offered deferred admission to the graduate program during their junior year. BS/MS applicants may request to waive the GMAT requirement. To be eligible for the waiver, applicants must have a cumulative GPA of 3.0 or higher. To request a waiver, download, complete, and submit the Request to Waive GMAT Form. This form is found under Supplemental Application, School of Business Administration.

It is important that students register for the 5000-level classes that are double counted in order to satisfy the electives requirement for the MIS major as well as get credit towards the BS/MS program. If students take only the 4000-level electives, those courses cannot be counted for the BS/MS degree.

Students offered deferred admission will remain classified as undergraduates until they have completed all undergraduate degree requirements. At that time, students who have maintained an overall undergraduate GPA 3.2 and have earned a B or above in the double-counted graduate courses, will be reclassified as a graduate student through Graduate School.

Specific offerings for each semester may be found in the Schedule of Classes.

To be eligible for the Business Analytics, Combined B.S./M.S. option, students must:

1. Complete MIS 1000, MIS 3000, MIS 3050, MIS 3140, and MIS 4050
2. Have a major GPA of 3.2 or above.
3. Apply for and receive delayed admission in the M.S. program and thereby the substitution of graduate classes MIS 5160, MIS 5460, MIS 5560 and MIS 5470 in place of MIS 4060, MIS 4460, MIS 4560 and MIS 4470.
4. Maintain a minimum 3.2 cumulative GPA to completion of the degree in Management Information Systems, B.S., Specialization in Business Analytics.
5. Students must receive formal delayed admission into the program prior to registering for MIS 5160, MIS 5460, MIS 5560 and MIS 5470.

For more information:

Contact Paul Trumbull at: trumbull@oakland.edu

For the full MS program requirements visit the Master of Science in Business Analytics website

MSITM, Combined B.S./M.S.

The MSITM, Combined B.S./M.S. is a combined bachelor/master degree program that provides high-achieving students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently. It is designed for students who are high academic achievers and creates an integrated learning experience along

several knowledge paths. The MSITM, Combined B.S./M.S. program students will be able to earn their master's degree by completing 18 credits (6 courses instead of 10) beyond the undergraduate MIS major requirements.

Students accepted for the MSITM, Combined B.S./M.S. program must have a minimum overall undergraduate GPA of 3.2. Students may apply to the MSITM, Combined B.S./M.S. program and be offered deferred admission to the graduate program during their junior year. MSITM, Combined B.S./M.S. applicants may request to waive the GMAT requirement. To be eligible for the waiver, applicants must have a cumulative GPA of 3.0 or higher. To request a waiver, download, complete, and submit the Request to Waive GMAT Form. This form is found under Supplemental Application, School of Business Administration.

It is important that students register for the 5000-level classes that are double counted in order to satisfy the electives requirement for the MIS major as well as get credit towards the MSITM program. If students take only the 4000-level electives, those courses cannot be counted for the MSITM degree.

Students offered deferred admission will remain classified as undergraduates until they have completed all undergraduate degree requirements. At that time, students who have maintained an overall undergraduate GPA 3.2 and have earned a 3.0 or above GPA in the double-counted graduate courses, will be reclassified as a graduate student through Graduate Study.

Please refer to the Graduate Catalog for the recommended Schedule and Course Options for the MSITM, Combined B.S./M.S. program.

Specific offerings for each semester may be found in the Schedule of Classes.

Non Degree

Accounting Minor

Department Website

A minor in accounting provides students with a background in financial and managerial accounting. The knowledge gained through this minor can be applied to many career paths - those directly related to accounting and finance as well as careers in other settings including corporate, small business and not-for-profit organizations.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Accounting

Required courses

- ACC 2000 - Financial Accounting (4)
- ACC 2100 - Managerial and Cost Accounting I (4)

Elective courses

Four additional courses in any 3000- or 4000-level accounting (ACC) courses.

Additional requirements

The minimum grade of C must be earned in each course in the accounting minor and in the prerequisites for each course. This minor is open to all students except accounting majors.

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Business Analytics Minor

Department Website

Every day more and more companies are leveraging the benefits of business analytics to improve customer service, enhance operational performance, identify new business markets and drive revenue growth. The industry is flourishing. The World Economic Forum predicts that data scientists and analysts will become the number one emerging role in the world by 2022.

No longer the exclusive domain of IT professionals, the search for business and data analytics skills are appearing in job descriptions in industries such as healthcare, automotive, financial services, marketing, human resources, education and more. Employers agree, finding people who have the requisite blend of quantitative computing and business domain knowledge and skills for business analytics is a challenge.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Business Analytics

Required courses

- MIS 4460 - Business Analytics (3)
- MIS 4560 - Introduction to Data Science (3) **or** MIS 4470 - Practical Computing for Data Analytics (3)
- MTH 1222 - Calculus for the Social Sciences (4) **or** MTH 1554 - Calculus I (4)
- QMM 2410 - Statistical Methods for Business II (3) **or** EGR 2600 - Introduction to Industrial and Systems Engineering (4) **or** STA 2221 - Introduction to Statistical Methods (4) **or** STA 2226 - Applied Probability and Statistics (4)

Students are recommended to take both MIS 4560 and MIS 4470. If students take both of these courses, one of them will be counted towards the elective. Students who have taken MIS4470 or MIS5470 and are under a previous catalog can count these as required courses for the BA Minor.

Elective courses - choose two

- ACS 4660 - Financial Economics (3)
- APM 4334 - Applied Numerical Methods: Matrix Methods (4)
- ECN 4050 - Econometrics (3)
- FIN 4250 - Financial Derivatives (3)
- MIS 4410 - Operations Analytics (3) **or** POM 4410 - Operations Analytics (3)
- MIS 4500 - Web Analytics (3)
- MIS 4560 - Introduction to Data Science (3) **or** MIS 4470 - Practical Computing for Data Analytics (3)
- MIS 4600 - Deep Learning and Text Analytics (3)

- MIS 4900 - Special Topics in MIS **(3) (with Minor Coordinator's approval)**
- MTH 2775 - Linear Algebra **(4)**
- QMM 4400 - Management Science **(3)**
- QMM 4520 - Forecasting **(3)**
- STA 4002 - Applied Linear Models I **(4)**
- STA 4330 - Time Series I **(4)**

Additional requirements

A minimum grade of C must be earned in each course in the business analytics minor and in the prerequisites for each course.

Certain MIS 4900 or POM 4900 Special Topics courses can count as a minor requirement with prior approval of the minor coordinator based on the topic.

This minor is open to all majors. Non-SBA students should contact the minor coordinator to determine the total number of courses required for the minor.

The minor in business analytics (BA) adds only four courses to the degree requirements for SBA students.

Students cannot obtain both a minor in Business Analytics and a MIS major with a Business Analytics specialization.

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Business Minor

Department Website

Powerful programs and a strong student-centered education that merges experiential learning with innovative thinking, technology and hands-on applications mean Oakland business students can take advantage of incomparable opportunities to practice business and leadership skills within and beyond the classroom. No matter which major is the stepping-stone to your future, you will gain a comprehensive overview in the business foundations and specifics of your chosen field.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Business

Required courses

- ACC 2000 - Financial Accounting **(4)** **or** ACC 3000 - Survey of Accounting **(4)**
- ECN 1500 - Economics in Today's World **(4)** **or** ECN 1600 - Introduction to the Global Economy **(4)** **or** ECN 2000 - Principles of Macroeconomics **(4)** **or** ECN 2010 - Principles of Microeconomics **(4)** **or** ECN 2020 - Principles of Global Macroeconomics **(4)**

Elective courses - choose four

- ENT 3010 - Developing New Venture Ideas **(3)**
- FIN 3000 - Survey of Finance **(3)**
- MGT 3000 - Survey of Management **(3)** **or** ORG 3300 - Introduction to Organizational Behavior **(3)**
- MGT 3500 - Legal Environment of Business **(3)**
- MIS 3010 - Survey of Management Information Systems **(3)** **or** MIS 3000 - Management Information Systems **(3)**
- MKT 3000 - Survey of Marketing **(3)**
- POM 3000 - Survey of Operations Management **(3)**

Note: Students who have completed MKT 3020 before declaring a Business minor can substitute the course for the MKT 3000 elective course.

Additional requirements

This minor is not open to pre-business students, business undecided students or students holding major standing in the School of Business Administration. ACC 3000, MGT 3000, MIS 3010, MGT 3000, POM 3000, and FIN 3000 cannot be used to fulfill the requirement of any other SBA major or other SBA minor, except for the Entrepreneurship minor or the International Management minor for non-SBA students. In addition, these courses cannot be used to fulfill any of the pre-core course requirements for the Master of Business Administration, Master of Accounting, or Master of Science in Information Technology Management degrees at Oakland University.

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Digital Marketing Minor

Department Website

The Digital Marketing Minor offers students a comprehensive exploration of the dynamic world of digital marketing strategies and techniques. In this program, students will gain an understanding of how businesses effectively leverage online platforms and technologies to achieve strategic objectives and connect with their target audiences. Through a combination of theoretical insights and hands-on experience, students will delve into key topics such as social media marketing, search engine optimization (SEO), content creation and distribution, email marketing, online advertising, data analytics, and more.

The Digital Marketing Minor complements a variety of business majors but is also available for students from across the university. Whether aiming to launch their own entrepreneurial ventures or contribute to established organizations, students will develop practical skills that are highly relevant in today's rapidly evolving digital landscape. This minor is not available for Market majors.

Special offerings for each semester may be found in the Schedule of Classes.

Required Courses

- MKT 3020 - Marketing **(3)** **or** MKT 3000 - Survey of Marketing **(3)**
- MKT 4040 - Consumer Behavior **(4)**
- MKT 4100 - Digital Marketing **(3)**
- MKT 4130 - Social Media Marketing **(3)**

- MKT 4150 - Digital Marketing Design and Analysis (3)

Economics Minor

Department Website

A minor in economics provides a valuable understanding of key economic concepts and their applications to the modern economy. Students also learn a variety of economic policies and develop a set of analytical skills that are valuable for the marketplace. An economics minor is useful to students in all disciplines. For students who are not majoring in economics, the minor in economics boosts their academic major and prepares them for successful careers or graduate programs in a variety of disciplines.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Economics

Required courses

- ECN 2010 - Principles of Microeconomics (4)
- ECN 2020 - Principles of Global Macroeconomics (4) **or** ECN 2000 - Principles of Macroeconomics (4)

12 credits in Economics (ECN) courses at the 3000 or 4000 level

ACS 4660 may satisfy three credits toward the Economics minor

Additional requirements

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Entrepreneurship Minor

Department Website

Through the courses in the entrepreneurship minor, students learn how to start their own business and successfully launch new ideas. Courses are designed so students can complete the minor rapidly while maximizing their knowledge. Oakland's entrepreneurship minor can complement any major, allowing students to pursue their primary passion while gaining valuable and practical knowledge and transferable skills.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Entrepreneurship

Requirements for Business Majors

The minor consists of a minimum of four courses.

Required courses

- ENT 3010 - Developing New Venture Ideas (3)
- ENT 4400 - New Venture Creation (3)

Elective courses - choose two

- ENT 3050 - The Psychology of Creativity and Innovation (4)
- MGT 4540 - Business Entities (3)
- MKT 4550 - Product Management (3)
- MKT 4600 - Entrepreneurial Marketing (3)
- ORG 4310 - Leadership and Group Performance (4)
- ENT 4900 - Seminars in Entrepreneurship (1 TO 4)

Requirements for Non-Business Majors

The minor consists of a minimum of five courses.

Prerequisite courses - choose two

- ACC 2000 - Financial Accounting (4) **or** ACC 3000 - Survey of Accounting (4)
- FIN 3000 - Survey of Finance (3)
- MGT 3000 - Survey of Management (3)
- MKT 3000 - Survey of Marketing (3)

Required courses

- ENT 3010 - Developing New Venture Ideas (3)
- ENT 4400 - New Venture Creation (3)

Elective courses - choose one

- ENT 3050 - The Psychology of Creativity and Innovation (4)
- ENT 4900 - Seminars in Entrepreneurship (1 TO 4)
- MGT 4540 - Business Entities (3)
- MKT 4550 - Product Management (3)
- MKT 4600 - Entrepreneurial Marketing (3)
- ORG 4310 - Leadership and Group Performance (4)

Additional requirements

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University.

Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Finance Minor

Department Website

A minor in finance broadens the learning experiences and professional opportunities of business students by providing them with knowledge in the basic elements of managerial financial. By enhancing understanding of this critical business function, this minor can enhance any business major.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Finance

Required courses

- FIN 3220 - Managerial Finance I **(3)** or FIN 3550 - Finance for Actuarial Science **(4)**

Elective courses

Three courses in 3000 or 4000 level finance (FIN) courses

Either ACC 3010 or ACC 4003 or ACC 4150 may satisfy three credits toward the finance minor.

Additional requirements

A minimum grade of C must be earned in each course in the finance minor and in the prerequisites for each course. This minor is open to all students except finance majors.

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Human Resource Management Minor

Department Website

Human Resource Management is a minor designed to prepare students for careers in business. The minor is tailored with courses to maximize students' abilities to gain knowledge and skills in a concentrated timeframe. Students looking to minor in Human Resource Management can pair this concentration with a variety of other business and non-business majors.

Just like Human Resource Management majors, students who minor in Human Resource Management have access to several different student organizations on OU's campus. Some student organizations are SHRM, the Society for Human Resource Management and Alpha Kappa Psi, the professional business fraternity. These organizations give students the opportunity to become more involved with the student body, develop leadership skills, open doors for internships and jobs, and cultivate friendships that can last a lifetime.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Human Resource Management

Five courses are required to complete the Human Resource Management minor; these include the following.

Required courses

- ORG 3300 - Introduction to Organizational Behavior **(3)**
- ORG 3310 - Introduction to the Management of Human Resources **(3)**
- ORG 4340 - Advanced Human Resources Management **(4)**

Elective courses - choose two

- ORG 4300 - Organizational Research Methods **(4)**
- ORG 4310 - Leadership and Group Performance **(4)**
- ORG 4320 - Motivation and Work Behavior **(4)**
- ORG 4330 - Labor/Management Relations **(4)**
- ORG 4600 - Compensation and Benefits **(4)**
- ORG 4700 - International Organizational Behavior and Human Resources Management **(4)** or ORG 4900 - Topics in Organizational Management **(3 TO 4)**

Additional requirements

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Information Security Management Minor

Department Website

Information security management, also called cyber security, ensures the confidentiality, integrity and availability of an organization's information, data and IT services. Information security refers to the processes and methodologies which are designed and implemented to protect print, electronic or any other form of confidential, private and sensitive information from unauthorized access, use, misuse, disclosure, destruction, modification or disruption.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Business Administration, Information Security Management

Required courses

- MIS 1000 - Business Problem Solving with Information Technology **(3)** or CSI 1200 - Introduction to Computing and Programming using Excel **(4)**
- MIS 3000 - Management Information Systems **(3)** or MIS 3010 - Survey of Management Information Systems **(3)**
- MIS 3050 - Information Technology Foundations **(3)**
- MIS 4170 - Practical Cyber Security Fundamentals **(3)**
- MIS 4180 - IS Risk Analysis and Security Controls Development **(3)**

Elective courses - choose one

- MIS 4130 - Networks **(3)**
- MIS 4140 - Information Security Lab **(3)**
- MIS 4700 - IS Security **(3)**
- MIS 4750 - Mobile Security and Secure Application Development **(3)**

Additional requirements

A minimum grade of C must be earned in each course in the ISM minor and in the prerequisites for each course. This minor is open to all students except MIS majors.

Certain MIS 4900 Special Topics courses can count as a minor requirement with prior approval of the minor coordinator based on the topic. Students cannot obtain both the ISM Minor and Major with ISM Specialization.

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

International Management Minor

Department Website

Students who graduate with an international management minor will have an understanding of the complexities of doing business in a globally integrated marketplace and the impact of political, economic, cultural factors that underlie global decision making. Additionally, students will be able to identify international opportunities, and the factors that impact success of global business endeavors. The minor requires a minimum of four courses for business students, and five courses for students from all other majors. Students will discover strategies organizations employ when they operate worldwide and learn about the organizational behavior of companies from different parts of the world.

This minor is particularly relevant for students who are interested in working in globally integrated industries like automotive, defense, and technology, and is complimentary for a diverse range of majors, including engineering and computer science, international relations, and most liberal arts majors.

Special offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in International Management

Requirements for Business Majors

The International Management Minor allows business students to pursue their major, while complementing their knowledge base with a global focus that will broaden their opportunities in any industry:

Required courses

- ECN 2000 - Principles of Macroeconomics **(4)** **or** ECN 2010 - Principles of Microeconomics **(4)** **or** ECN 2020 - Principles of Global Macroeconomics **(4)**
- MGT 4230 - International Business **(4)**
- MGT 4250 - Global Business Strategy **(4)**

Electives courses - choose one

- ECN 3260 - International Economic Development **(3)**
- ECN 3730 - International Trade **(3)**
- ECN 3740 - Economics of Intl Finance **(3)**
- FIN 4190 - International Financial Management **(3)**
- MKT 4500 - International Marketing **(3)**
- ORG 4700 - International Organizational Behavior and Human Resources Management **(4)**

International Management Minor: All Non-Business Majors

The International Management minor offers the opportunity for students from all majors to learn the basic concepts of business, in addition to the foundations of doing business in the global marketplace.

Required courses

- ECN 1500 - Economics in Today's World **(4)** **or** ECN 1600 - Introduction to the Global Economy **(4)** **or** ECN 2000 - Principles of Macroeconomics **(4)** **or** ECN 2010 - Principles of Microeconomics **(4)** **or** ECN 2020 - Principles of Global Macroeconomics **(4)**
- MGT 4230 - International Business **(4)**
- MGT 4250 - Global Business Strategy **(4)**

Elective courses - choose one

- ECN 3260 - International Economic Development **(3)**
- ECN 3730 - International Trade **(3)**

- MKT 4500 - International Marketing **(3)**
- ORG 4700 - International Organizational Behavior and Human Resources Management **(4)**

Additional requirements

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Management Information Systems Minor

Department Website

A minor in Management Information Systems allows students to enhance their understanding of how information technology applies to their major field of study. Business students gain the skills necessary to expertly leverage information technology and strategically align it with solutions in any business environment. An MIS minor can enhance any major, positioning the graduate for roles in corporate, small business, government and not-for-profit organizations.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Management Information Systems

Required courses

- MIS 1000 - Business Problem Solving with Information Technology **(3)** **or** CSI 1200 - Introduction to Computing and Programming using Excel **(4)**
- MIS 3000 - Management Information Systems **(3)** **or** MIS 3010 - Survey of Management Information Systems **(3)**
- MIS 3050 - Information Technology Foundations **(3)**
- MIS 3140 - Business Database Systems **(3)**
- MIS 4050 - Business Systems Analysis and Design **(3)**

Elective course

- One 4000 level elective course in MIS

Additional requirements

A minimum grade of C must be earned in each course in the MIS minor and in the prerequisites for each course. This minor is open to all students except MIS majors.

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each

course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Marketing Minor

Department website

The Marketing minor is tailored with courses to maximize students' abilities to gain knowledge and skills in a concentrated time frame. Students looking to minor in Marketing can pair this concentration with a variety of other business and non-business majors.

The career opportunities for Marketing minors are plentiful and varied. Some examples of employment OU students may find with a Marketing minor include marketing analyst, sales representative, and experiential marketing. Career services can help students narrow their career focus.

Just like Marketing majors, students who minor in Marketing have access to several different student organizations on OU's campus. Some student organizations are AMA, the American Marketing Association and Alpha Kappa Psi, the business fraternity. These organizations give students the opportunity to become more involved with the student body, develop leadership skills, open doors for internships and jobs, and cultivate friendships that can last a lifetime.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Marketing

The minor in marketing consists of a minimum of five courses, including four foundation courses and one elective.

Required courses

- MKT 3020 - Marketing **(4)**
- MKT 4040 - Consumer Behavior **(4)**
- MKT 4050 - Marketing Research **(4)**
- MKT 4530 - Strategic Marketing Management **(4)**

Elective courses - choose one

- MKT 4060 - Integrated Marketing Communications **(3)**
- MKT 4100 - Digital Marketing **(3)**
- MKT 4210 - Distribution Channels Management and Retailing **(3)**
- MKT 4220 - Marketing Logistics and Supply Chain Management **(3)**
- MKT 4300 - Professional Selling **(3)**
- MKT 4500 - International Marketing **(3)**
- MKT 4550 - Product Management **(3)**
- MKT 4600 - Entrepreneurial Marketing **(3)**
- MKT 4700 - Business to Business Marketing **(3)** or MKT 4900 - Seminar in Marketing **(3)**

Additional requirements

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

Operations Management Minor

Department Website

An Operations Management minor offers students the opportunity to enhance their major with knowledge in operational design and control, including forecasting, planning and quality assurance. An Operations Management minor can position graduates for positions in areas such as procurement, logistics, quality assurance, process improvement, inventory and more.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Operations Management

Required courses

- MTH 1222 - Calculus for the Social Sciences **(4)** or MTH 1554 - Calculus I **(4)**
- QMM 2400 - Statistical Methods for Business I **(3)** or STA 2220 - Introduction to Statistical Concepts and Reasoning **(4)** or STA 2226 - Applied Probability and Statistics **(4)**
- QMM 2410 - Statistical Methods for Business II **(3)**
- ACC 2000 - Financial Accounting **(4)**
- ACC 2100 - Managerial and Cost Accounting I **(4)**
- POM 3430 - Operations Management **(3)**

Electives courses - choose three

- POM 4350 - Management of Service Operations **(3)**
- POM 4400 - Process Management **(3)**
- POM 4410 - Operations Analytics **(3)** or MIS 4410 - Operations Analytics **(3)**
- POM 4420 - Supply Chain Management **(3)**
- POM 4430 - Operations Planning and Control **(3)**
- POM 4470 - Procurement and Global Sourcing **(3)**
- POM 4480 - Project Management **(3)**
- POM 4600 - Lean Kaizen in Organizations **(3)**

Additional requirements

A minimum grade of C must be earned in each course in the operations management minor and in the prerequisites for each course. This minor is open to all students except operations management majors.

To earn this minor, and to take 3000- and 4000-level business classes, non-business students must meet with the minor coordinator and have an approved minor authorization form detailing the courses and the prerequisites required for the given minor. Once approved for the minor, students must take all the remaining courses in the minor at Oakland University. Students

must complete the prescribed courses for the minor with a grade of C or better in each course and the prerequisites for each course. Transfer students planning to earn a minor must earn at least nine credits toward the minor at Oakland University; at least six of these nine credits must be in courses at the 3000 level or above.

School of Education and Human Services

School Website

The School of Education and Human Services exemplifies excellence in our fields through clinical practice, curricula that is innovative, interdisciplinary and international, community engagement, teaching, and individual and collaborative research. We encourage intellectual curiosity in our students, who become strong, effective, inclusive and ethical leaders in a global society.

Our undergraduate programs include a Bachelor of Science in elementary education, a five-year secondary education program leading to teaching certification for selected majors, and a Bachelor of Science in human resource development. Minors in human resource development, lean leadership, training and development, applied leadership skills and employment systems and standards are also available.

Starting in Fall 2023 secondary education students earning their initial teaching certificate from the state of Michigan are not required to minor in any subject area.

The School of Education and Human Services also offers numerous programs at the graduate and doctoral levels; for information on these programs see the OU Graduate School.

Bachelor of Science

Early Childhood Education, B.S.

Department Website

Oakland University's Early Childhood Education, B.S. (can lead to a Michigan Department of Education teaching certificate in Birth - Kindergarten/Pre-K - Grade Three). This program qualifies you to teach in a variety of early childhood settings including but not limited to Birth - Grade Three in school settings, community based early childhood programs, and early intervention and early childhood special education programs. This degree provides coaching and mentoring experiences with local schools and community agencies. The focus is on whole child development including cognitive, socio, emotional, language and physical domains. Emphasis is given to the role of play, diversity & inclusion, and the role of family and culture in supporting young children. During this program, you will develop outstanding teaching skills, learn to address the needs of children and their families, use authentic assessment to evaluate children's work, and learn developmentally appropriate pedagogical approaches while interacting with young children.

Admission to the Early Childhood Education, B.S.

Admission to major standing is required before beginning the professional sequence. Students using this catalog to meet major requirements may also use any course subsequently approved as satisfying requirements and published in a later catalog.

Students who wish to pursue a B.S. degree in Early Childhood Education are admitted with pre-early childhood education status.

Minimum criteria for admission to the Early Childhood Education, B.S. include:

1. A cumulative grade-point average (GPA) of 2.80 or higher at Oakland University

2. Complete EED 2000 with a minimum grade of B
3. Complete or place out of MTH 0662 with a minimum grade of C
4. Complete WRT 1060 with a minimum grade of B
5. Read and sign, acknowledging a duty to uphold the Michigan Code of Educational Ethics
6. Submission of a completed major standing application to the SEHS Advising Office.

Students can apply for major standing once they are registered for EED 2000.

Major standing will be approved pending successful completion of all requirements.

Second-degree students from regionally accredited institutions are exempt from Oakland University's general education requirements. This does not apply to students educated outside the U.S.

After admission, students meet for course selection with Academic Advisers in the SEHS Advising Office

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Early Childhood Education, B.S.

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, and U.S. Diversity. For details, refer to the General Education Requirements section of the catalog.

To earn the Early Childhood Education, B.S. degree, students must:

- Complete a minimum of 120 credits
A minimum of 45 credits must be completed at Oakland University
A minimum of 32 credits must be at the 3000 level or above
- Meet University General Education Requirements
- Earn a minimum grade of C in each general education course
- Earn a minimum grade of B in WRT 1060 Composition II
- Complete the pre-professional and professional education coursework with B or better in each course unless otherwise noted

Pre-professional courses

- EED 1000 - Careers in Teaching (1)
- EED 2000 - Teaching, Learning, and Schools (3)
- EED 2400 - Science for the Elementary Teacher (3)
- EED 2500 - Social Studies for the Elementary Teacher (3)
- MTE 2110 - Mathematics for Elementary Education I (3) (with a minimum grade of C)
- MTE 2111 - Mathematics for Elementary Education II (4) (with a minimum grade of C)

- RDG 2200 - Literature for Children (3)

Professional Education Courses

- EC 3331 - Child Development Birth to Age 8: Typical and Atypical (3)
- EC 3332 - Learning Through Play (3)
- EC 3333 - Infant and Toddler Development and Programs (3)
- EC 3334 - Early Language and Literacy Birth to Age 4: Content and Pedagogy (3)
- EC 3335 - Seminar 1 - Core Teaching Practices (3)
- RDG 3200 - Emergent Literacy (3)
- EC 3337 - Early Intervention (EI) and Early Childhood Special Education (ECSE) (3)
- EC 3338 - Math for Young Children: Content and Pedagogy (3)
- EC 3339 - Building Children's Resilience: From Trauma Informed to Trauma-sensitive Approaches to ECE (3)
- EC 3340 - Seminar 2 - Professionalism and Collaboration (3)
- EC 4441 - Culturally Responsive Education: The Role of Family, Culture & Community (3)
- EC 4442 - Social Studies for Young Children: Content and Pedagogy (3)
- EC 4443 - Science for Young Children: Content and Pedagogy (3)
- EC 4444 - Math: Teaching Pre-Kindergarten to Third Grade (3)
- EC 4445 - Seminar 3: Social-Emotional Learning and Diversity, Equity, and Inclusion (3)
- EC 4446 - Seminar 4: Reflective Practice and Well-Being (3)
- EC 4950 - Internship in BKPK 3 (9)

Program notes

In order to be recommended for a Michigan Teaching Certificate, in addition to the B.S. requirements, candidates must successfully complete their assigned Michigan Tests for Teacher Certification and be in compliance with all legal requirements for Michigan certification. Please visit the Human Development and Child Studies website for details.

Elementary Education, B.S.

Students who wish to pursue an elementary education major are admitted with pre-elementary education status. Students who hold a baccalaureate degree in another discipline seeking a second undergraduate degree must meet the undergraduate degree program requirements, excluding General Education Requirements. After admission, students meet for course selection with Academic Advisers in the SEHS Advising Office.

Internship

EED 4950 must be taken in the final semester of the degree program.

Application for the internship, EED 4950, must be made one full academic year in advance of the intended enrollment. Students must check the School and Field Services website for the date of the required seminar meeting (held in the fall semester for both fall and winter student teacher applicants). Admission criteria for the internship are: a) satisfactory grade-point average and minimum required grades; b) completion of all professional education coursework and field placements; and c) students placed in PK-3 and 3-6 classrooms must have passed the MTTC (Michigan Test for Teacher Certification) Elementary Education exam or equivalent. Students will be required to be fingerprinted and have a state police and FBI background check at their own expense.

A minimum grade of C in EED 4950 is required for graduation and a minimum grade of B for recommendation for certification. Students who do not earn the minimum grade for certification can earn a B.S. in Elementary Education without certification with an approved petition of exception.

Michigan Teacher Certification

To be recommended for a Michigan Teaching Certificate at the PK-3 and 3-6 grade bands Elementary Education majors must successfully complete requirements for the B.S. in Elementary Education degree, earn a minimum grade of a B in EED 4950, and successfully pass the required elementary education MTTC exam. The State also requires a current certificate in a Michigan Department of Education approved first aid and adult/child CPR training before certification may be recommended. Successful completion of our program and internship does not guarantee certification by the State of Michigan. See more information about teacher certification at: SEHS Advising.

Admission to the major

Admission to major standing in Elementary Education is required before taking professional education courses. Elementary education students plan their course work with an adviser in the SEHS Advising Office.

The program seeks students who are committed to teaching in diverse schools or districts. Meeting the minimum course requirements does not guarantee admission to the major. Qualitative criteria may be required as well. Underrepresented students are especially encouraged to apply. Minimum criteria for admission to the elementary education major are:

1. A cumulative grade-point average (GPA) of 2.80 or higher at Oakland University
2. Complete EED 2000 with a minimum grade of B
3. Complete or place out of MTH 0662 with a minimum grade of C
4. Complete WRT 1060 with a minimum grade of B
5. Read and sign, acknowledging a duty to uphold the Michigan Code of Educational Ethics
6. Submission of a completed major standing application to the SEHS Advising Office.

Students can apply for major standing during the semester they are taking EED 2000.

Major standing will be approved pending successful completion of all requirements.

Schedule of Classes

Requirements for the major in elementary education, B.S.

Admission to major standing is required before beginning the professional sequence. Students using this catalog to meet major requirements may also use any course subsequently approved as satisfying requirements and published in a later catalog.

General Education courses

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, students are recommended, but not required, to select from the General Education designated courses listed below:

Foundation:

- WRT 1060 - Composition II

Formal Reasoning:

- MTE 2111- Mathematics for Elementary Education II

Exploration:

- Arts - THA 1000- Introduction to Theatre
- Language and Culture - LIN 1101- The Humanity of Language
- Global Perspective - GEO 2000 Global Human Systems
- Literature - choose any approved course
- Natural Science and Technology - BIO 1002 Human Biology or PHY 1060 Earth Science
- Social Science- PS 1100 - Introduction to American Politics
- Western Civilization - HST 1100- Introduction to American History Before 1877 or HST 1200 Introduction to American History Since 1877

Integration:

- Knowledge Application - JRN 2000 Introduction to Journalism and News Writing, WRT 3062 Writing Center Studies and Tutoring Practice, WRT 3064 Writing About Culture: Ethnography, or WRT 3086 Workshop in Creative Non-Fiction (these classes also satisfy the Writing Intensive in General Education requirement)
- Writing Intensive in Major and U.S. Diversity General Education requirements are met with EED 3100

To earn the BS degree, students must:

- Complete a minimum of 120 credits
A minimum of 45 credits must be completed at Oakland University

A minimum of 32 credits must be at the 3000 level or above
- Meet University General Education Requirements
Earn a minimum grade of C in each general education course

Earn a minimum grade of B in WRT 1060 Composition II
- Complete the pre-professional and professional education coursework with B or better in each course unless otherwise noted

Pre-professional courses

- EED 1000 - Careers in Teaching (1)
- EED 2000 - Teaching, Learning, and Schools (3)
- EED 2400 - Science for the Elementary Teacher (3)
- EED 2500 - Social Studies for the Elementary Teacher (3)
- MTE 2110 - Mathematics for Elementary Education I (3) (with a minimum grade of C)

- MTE 2111 - Mathematics for Elementary Education II **(4)** (Formal Reasoning) (with a minimum grade of C)
- RDG 2200 - Literature for Children **(3)**

Professional education courses

- EED 3100 - Teaching and Learning for Equity, Diversity and Inclusion **(3)**
- EED 3150 - How People Learn **(3)**
- EED 3300 - Teaching Mathematics 1 **(3)**
- EED 3350 - Teaching Mathematics 2 **(3)**
- EED 3450 - Teaching Science 1 **(3)**
- EED 3500 - Teaching Social Studies 1 **(3)**
- EED 3600 - Seminar 1 - The Productive Classroom **(3)**
- EED 3650 - Seminar 2 - Teaching Diverse Students **(3)**
- EED 4300 - Teaching Mathematics 3 **(3)**
- EED 4400 - Teaching Science 2 **(3)**
- EED 4500 - Teaching Social Studies 2 **(3)**
- EED 4600 - Seminar 3 - Reflecting on my Practice **(3)**
- EED 4650 - Seminar 4 - Putting it all Together **(3)**
- EED 4950 - Internship in Elementary Education **(9 to 12)**
- RDG 3200 - Emergent Literacy **(3)**
- RDG 3250 - Beginning Literacy **(3)**
- RDG 4200 - Almost Fluent and Fluent Literacy **(3)**

Program notes

In order to be recommended for a Michigan Teaching Certificate, in addition to the B.S. requirements, candidates must successfully complete their assigned Michigan Tests for Teacher Certification and be in compliance with all legal requirements for Michigan certification.

Field Placements

Field placements are required in all reading, seminar, and some pre-professional classes. Field assignments connected to mathematics, science, and social studies are required in each of the methods courses. The Office of School and Field Services arranges placements, including placement in culturally and economically diverse school districts. Depending on school district requirements, students may be required to be fingerprinted and have a state police and FBI background check, at their expense, before beginning a field placement.

Human Resource Development, B.S.

Department Website

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Human Resource Development, B.S. program

To earn a Bachelor of Science degree with a major in human resource development, students must:

1. Complete a minimum total of 120 credits.
2. Complete at least 45 credits at Oakland University.
3. Complete and at least 32 credits in courses at the 3000 level or above.
4. Have a cumulative grade point average of at least 2.00.
5. Complete the university General Education Requirements. Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, and U.S. Diversity.
6. Complete the human resource development core (12 credits), human resource development focus area courses (40 credits), human resource development electives (12 credits), internship or approved alternative (4 credits), and general electives (12 credits). Students must obtain a minimum grade of C+ in each required HRD course.

Required courses for the Bachelor of Science degree in Human Resource Development

The program leading to the Bachelor of Science degree in human resource development includes the following HRD courses, electives and internship.

A. HRD Core Courses -- 12 credits

Core courses introduce important theoretical constructs and skills for pursuing a major in human resource development. Students must earn a minimum grade of C+ in each of the following core courses:

- HRD 3100 - Introduction to Human Resource Development (4)
- HRD 3410 - Ethics in Human Resource Development (4)
- HRD 3530 - Workforce Diversity (4)

B. Required HRD Focus Area Courses -- 40 credits

HRD Focus Area courses should be taken after students finish the HRD core courses. HRD focus area courses must be completed with a minimum grade of C+. There are four HRD Focus Areas: Organizational Development, Learning and Development, Career/Leadership Development and Employment Systems and Standards.

Organizational Development

- HRD 3210 - Group/Team Development and Leadership (4)
- HRD 3230 - Fundamentals of Human Interaction (4)
- HRD 4200 - Organizational Analysis and Culture (4)

Learning & Development

- HRD 3300 - Instructional Design and Development (4)
- HRD 3700 - Human Resource Information Systems (4)

Career/Leadership Development

- HRD 3510 - Principles of Leadership (4)
- HRD 3520 - Career Development (4)

Employment Systems & Standards

- HRD 3420 - Work and the Law (4)
- HRD 3430 - Talent Acquisition and Performance Management (4)
- HRD 3440 - Introduction to Labor and Employment Relations (4)

C. HRD Electives -- 12 credits

HRD electives allow students to take any HRD courses outside of the required HRD Core courses and HRD Focus Area courses to support their individual interests and career aspirations. Students must take 12 credits of HRD Electives and must be completed with a minimum grade of C+.

- HRD 3445 - Introduction to Public Sector Labor and Employment Relations (4)
- HRD 3600 - Lean Principles and Practices in Organizations (4)
- HRD 4320 - Training Needs Assessment and Program Evaluation (4)
- HRD 4410 - The Study of Labor and Work Organizations (4)
- HRD 4420 - Employee Benefits (4)
- HRD 4430 - Advanced Collective Bargaining and Dispute Resolution (4)
- HRD 4441 - Advanced Work and the Law (4)
- HRD 4510 - Negotiation for Personal Success (4)
- HRD 4600 - Lean Kaizen in Organizations (4)
- HRD 4610 - Lean Green Belt Certificate (2)
- HRD 4700 - E-learning in Organizations (4)

D. General Elective Courses -- 12 credits

The general electives allow students to take courses that support their individual interests and career aspirations. General elective courses must be numbered 0500 or higher, and may be from HRD or any other field of interest. (Note: Can include any HRD or university courses, including HRD 4996 Independent Study, HRD 4900 Workshop: Career Development, and HRD 4970 Seminar.)

E. Human Resource Development Internship -- 4 credits

Internship requirements may be met by the completion of a professional internship, a research internship, a project internship, or a combination of two or three of these options. Applications for internships must be submitted by the designated deadlines (fall semester - June 15, winter semester - October 15 and summer semester - February 15). Applications will not be accepted after the deadline. The internship must be completed with a minimum grade of C+.

Professional internship (see prerequisites below in HRD 4950 course description)

This is the preferred and most common internship. In order for a student to complete a professional internship, four credits must be completed at an approved internship placement site for a total of 320 hours of work in the field of human resource development. HRD 4950 - Internship in HRD **(4)**

Research internship

In the rare case that a professional internship cannot be completed, a research internship of four credits may be completed by students who have the requisite backgrounds and skills to produce research work at the undergraduate level in the field of human resource development. To qualify for a research internship, students are required to have successfully completed the courses normally required for an HRD internship plus any additional courses appropriate for the acquisition of skills necessary for completion of the internship project(s).

It is required that a student intending to pursue this internship has previously conferred with an HRD faculty member regarding the availability of an appropriate research project and the willingness of the HRD faculty member to supervise the intern in his or her completion of the research project.

Students wishing to pursue a research internship must complete an application, including describing the proposed research internship. This form must also be signed by the HRD faculty member who has agreed to supervise the student. Completed applications must be submitted no later than the dates designated above for internship approval. Applications will be reviewed by a committee of the Department of Organizational Leadership.

Project internship

A project internship of four credits may be completed by students who have completed a minimum of two (2) years of work in the field of Human Resources or who are subject to special circumstances. To qualify for a project internship, students are required to have successfully completed the courses normally required for an HRD internship plus any additional courses appropriate for the acquisition of skills necessary for completion of the internship project(s).

It is required that a student intending to pursue a project internship has previously conferred with an HRD faculty member regarding the availability of an appropriate project or projects to complete as part of the internship and the willingness of the HRD faculty member to supervise the intern.

Applications must be obtained from the HRD Internship Coordinator. Completed applications must be submitted no later than the dates designated above for the internship approval. Applications will be reviewed by a committee of the Department of Organizational Leadership.

Certificate

Certificate in Lean

Department Website

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the undergraduate certificate in Lean

The Undergraduate Certificate in Lean is designed for those from any sector or any workplace who desire to build knowledge, skills, and abilities of Lean tenets, tools, and competencies.

- HRD 3510 - Principles of Leadership **(4)**
- HRD 3600 - Lean Principles and Practices in Organizations **(4)**

- HRD 4600 - Lean Kaizen in Organizations (4)
- HRD 4610 - Lean Green Belt Certificate (2)

Non Degree

Applied Leadership Skills Minor

Requirements for the minor in applied leadership skills

The minor in Applied Leadership Skills provides an academic background emphasizing education in leadership, group dynamics and interpersonal processes, ethics, diversity leadership, and leadership in organizations from a cross-disciplinary approach. This minor is intended for students who wish to develop knowledge of leadership and to develop practical leadership abilities. This minor may be useful to students interested in expanding their leadership capabilities within their communities, businesses, or other organizations.

No more than eight credits of course work used to satisfy another major, minor, or concentration may be applied toward this minor. Students must meet with an academic adviser to design a plan and complete a Minor Authorization Form identifying appropriately selected courses. The minor requires a minimum of 23 credits distributed among the areas described below. The student must earn a final course grade of C+ or higher in a course in order for the class to be counted for the minor.

a. Core Leadership Principles -- Must complete one of the following courses

- COM 3402 - Communication in Leadership (4)
- HRD 3510 - Principles of Leadership (4)

b. Group Dynamics/Interpersonal Processes in Leadership -- Must complete two of the following courses

- COM 2403 - Group Dynamics and Communication (4)
- COM 3000 - Relational Communication Theory (4)
- HRD 3210 - Group/Team Development and Leadership (4)
- HRD 3230 - Fundamentals of Human Interaction (4)
- ORG 4310 - Leadership and Group Performance (4)

c. Ethics in Leadership -- Must complete one of the following courses

- PHL 3510 - Ethics in Business (4)
- PS 3710 - International Politics of Human Rights (4)
- HRD 3410 - Ethics in Human Resource Development (4)

d. Diversity Leadership -- Must complete one of the following courses

- PS 3550 - Politics of Development (4)
- HRD 3530 - Workforce Diversity (4)
- COM 3300 - Communication, Culture, and Belonging (4)

e. Leadership in Organizations -- Must complete one of the following courses

- HRD 3440 - Introduction to Labor and Employment Relations (4)
- HRD 4200 - Organizational Analysis and Culture (4)
- MGT 3000 - Survey of Management (3)
- ORG 3300 - Introduction to Organizational Behavior (3)
- PS 3205 - American Political Culture (4)

Additional Information

Students should plan their coursework in a way that allows them to meet any of the prerequisites for the above courses. In particular, students are urged to take the following general education courses: PHL 1300, PS 1600 or PS 1100, and any foreign language. Study abroad opportunity through International Education may serve as a substitution for one or more of the course requirements, as determined by the HRD faculty (See Director of International Education for opportunities).

Employment Systems and Standards Minor

Employment Systems and Standards Minor provides the practical and theoretical bases of the employee/employer relationship, with and without collective bargaining. This program may be particularly useful to individuals interested in the operational aspects of employment, including the law, collective bargaining, employment philosophy, regulations and practices, and the dynamics of employment-related leadership and participative roles.

Requirements for the minor in employment systems and standards

This minor is open to all students. Those who seek to apply credits toward a degree must contact an academic adviser to design a degree plan and to select appropriate courses; the plan of study is subject to the approval of an academic adviser. This minor requires 23 or 24 credits distributed among the areas of preparation listed below. The student must earn a final course grade of C+ or higher in each of the required courses in order for the class to be counted for the minor.

The courses for the minor in Employment Systems and Standards are as follows (23 or 24 credits):

a. Must complete one of the following

- HRD 3440 - Introduction to Labor and Employment Relations (4)
- HRD 3445 - Introduction to Public Sector Labor and Employment Relations (4)

b. Must complete the following two courses

- HRD 3420 - Work and the Law (4)
- HRD 4441 - Advanced Work and the Law (4)

c. Must complete three of the following courses

- EHS 2350 - Occupational Safety and Health Standards (3)

- HRD 3530 - Workforce Diversity (4)
- HRD 4410 - The Study of Labor and Work Organizations (4)
- HRD 4420 - Employee Benefits (4)
- HRD 4430 - Advanced Collective Bargaining and Dispute Resolution (4)
- HRD 4441 - Advanced Work and the Law (4)
- HRD 4510 - Negotiation for Personal Success (4)
- WGS 3880 - Women in Modern America (4)

Human Resource Development Minor

Department Website

The minor in Human Resource Development is offered for students outside of the HRD major. The minor provides an overview of the field and an introduction to organization development, learning and development, career and leadership development, and employment systems and standards. The minor helps prepare graduates with conceptual knowledge, and technical and interpersonal skills for a variety of careers in HR and other fields.

Specific offerings for each semester may be found in the Schedule of Classes.

To obtain a minor in HRD a student must:

- Complete the minor authorization form with the approval of an academic adviser.
- Complete the minor core courses (24 credit hours) with a minimum grade of C+ in each course.

Minor core -- 24 credits

- HRD 3100 - Introduction to Human Resource Development (4)
- HRD 3210 - Group/Team Development and Leadership (4)
- HRD 3300 - Instructional Design and Development (4)
- HRD 3420 - Work and the Law (4)
- HRD 3430 - Talent Acquisition and Performance Management (4)
- HRD 3530 - Workforce Diversity (4)

Lean Leadership Minor

Lean leadership is a specialized minor for students who want to enhance their career opportunities through lean knowledge, practice and leadership in the workplace. Upon completion of the minor students will receive a lean green belt certificate.

Requirements for minor in Lean Leadership

All students interested in pursuing the minor must meet with an academic adviser in HRD. The minor requires 22 credits. The student must earn a final course grade of C+ or higher in each of the required courses in order for the class to be counted for the minor.

- HRD 3210 - Group/Team Development and Leadership (4)
- HRD 3510 - Principles of Leadership (4)
- HRD 3600 - Lean Principles and Practices in Organizations (4)

- HRD 4200 - Organizational Analysis and Culture (4)
- HRD 4600 - Lean Kaizen in Organizations (4)
- HRD 4610 - Lean Green Belt Certificate (2)

Learning and Development Minor

Department Website

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Learning and Development

This minor is open to all students. Those who seek to apply credits toward a degree must contact an academic adviser to design a degree plan and to select appropriate courses; the plan of study is subject to the approval of an academic adviser. The minor requires 20 credits. The student must earn a final course grade of C+ or higher in each of the required courses in order for the class to be counted for the minor.

Required Courses

- HRD 3100 - Introduction to Human Resource Development (4)
- HRD 3300 - Instructional Design and Development (4)
- HRD 4320 - Training Needs Assessment and Program Evaluation (4)
- HRD 4700 - E-learning in Organizations (4)

Students must complete one of the following:

- HRD 3210 Group/Team Development and Leadership (4)
- HRD 3700 - Human Resource Information Systems (4)

Teacher Education

Secondary Education, OU STEP

Department Website

Program description

The School of Education and Human Services (SEHS) and the College of Arts and Sciences (CAS) offer a combined bachelor and master of arts in teaching for the secondary teacher education program (STEP) for students seeking teacher certification at the middle or high school level. Students that complete this 5-year program will earn:

Bachelor's Degree in one of four content areas (listed below)

Recommendation for a Standard Michigan Teaching Certificate in two grade bands (grades 5-9 & 7-12)

Master of Arts in Teaching degree

Course descriptions and program details are found in the graduate catalog posted on their current website under the heading Master of Arts in Teaching Secondary Education.

Schedule of classes

Specific offerings for each semester may be found in the Schedule of Classes.

Admission to the combined program

Delayed admission into the MAT program is required before taking graduate-level professional education courses. Meeting the minimum requirements does not guarantee admission to the major. Qualitative criteria may be required as well. The program seeks students who are committed to teaching in diverse schools or districts. Underrepresented students are especially encouraged to apply. Minimum criteria for admission to the secondary education program are:

Admission to the Secondary Teacher Education Program is required before taking professional education courses. Five undergraduate majors are eligible for admission to the combined program.

- English Language Arts for Educators, B.A.
- Integrated Science, B.A.
- Mathematics for Educators, B.A.
- BSE, B.S.
- Social Studies with History for Educators, B.A.

Factors considered in admissions include the following:

1. A cumulative grade-point average (GPA) of 3.0 or higher at Oakland University
2. Complete WRT 1060 with a minimum grade of B
3. Pursue a teachable major and have 24 or more credits complete. Teachable majors require a 3.0 cumulative GPA with no single course below a C. Students can apply as early as after their sophomore year and are encouraged to work with their CAS adviser to determine the best time for them.
4. Read and sign the Michigan Code of Educational Ethics on the STEP application acknowledging your duty to uphold the ethical standards of the profession.
5. Two professional references will be required as a part of your application.
6. Goal Statement: In two pages or less, please include a short biography, your professional goals, and respond to the following: (1) What experiences have led you to believe you would enjoy teaching middle/high school students? (2) What abilities do you have that lead you to believe you can facilitate a productive classroom? (3) What knowledge, experience or personal attributes do you have that will benefit your students?
7. Additional information or an interview may be requested to provide a more complete application profile.

Applications to the combined program are considered twice per year. May 1st for regular applications and October 1 for late applications. Applications received after that date may be considered pending review by faculty and space in the program. Applications are available through the graduate school

Retention in the SEHS professional education programs Teacher Education students are expected to meet high professional, personal, and ethical standards, as detailed in the Teacher Education Expectations Statement.

School of Engineering and Computer Science

School Website

Introduction

Mission of the School of Engineering and Computer Science (SECS)

The School of Engineering and Computer Science (SECS) offers instruction leading to the degrees of Bachelor of Science in Engineering with majors in computer, electrical, industrial and systems, and mechanical engineering, and Bachelor of Science with majors in computer science and information technology. In addition, programs leading to the Bachelor of Science degree with majors in bioengineering, engineering chemistry, and engineering physics are offered jointly with the College of Arts and Sciences.

Recognizing that today's engineers must be able to solve complex and multi-disciplinary problems, the SECS undergraduate curriculum blends an interdisciplinary core with specialized study in the elected major for each program. SECS graduates are prepared to enter a wide variety of traditional and emerging engineering, computing and technical fields. They are also prepared to pursue graduate study in a range of disciplines, including engineering, computer science, business, law and medicine.

Accreditation

The undergraduate programs in bioengineering, computer engineering, electrical engineering, industrial and systems engineering, and mechanical engineering are accredited by the Engineering Accreditation Commission (EAC) of ABET. The undergraduate computer science and information technology programs are accredited by the Computing Accreditation Commission (CAC) of ABET.

Admission criteria

A 3.0 high school grade-point average is required for admission into the SECS programs; students admitted to Oakland University who wish to join an SECS program but whose high school GPA is below 3.0, will be designated as an EGR/CS Candidate major, and will be required to follow the internal transfer policy to change to their desired major. High school coursework in mathematics, chemistry, physics and other STEM-related disciplines beyond what is required for admission to Oakland University is encouraged, but is not required for admission to SECS programs.

Transfer Policy

Students must have a transfer GPA of 2.8 or greater in order to transfer into the SECS programs from other institutions; transfer students admitted to Oakland University who wish to join an SECS program but whose transfer GPA is below 2.8, will be designated as an EGR/CS Candidate major, and will be required to follow the internal transfer policy to change to their desired major. Students planning to transfer into any SECS program are encouraged to discuss and plan coursework with an Oakland University adviser to ensure compatibility with university and major requirements. Students are advised to review the Transfer Student information and the transfer equivalency guides found on Oakland University's website.

Transfer students from non-ABET-accredited foreign institutions must complete a minimum of 20 credits in their major program of study (professional subjects or professional electives) at Oakland University including the capstone design course.

School Honors

The School of Engineering and Computer Science may, at its discretion, confer departmental honors on students who have completed a minimum of 48 credits in their major specific courses including core, required professional subjects/courses, professional/technical electives, capstone course and professional options/tracks/concentrations at Oakland University and demonstrate a high level of scholarly accomplishment by achieving a GPA of 3.5 or higher in their major specific courses.

Each year the faculty selects graduating seniors to receive four special awards: Exceptional Achievement, Academic Achievement, Professional Development, and Service. In addition to scholarships available to all Oakland University students, the School of Engineering and Computer Science offers additional scholarship opportunities. Information about these opportunities may be found on the SECS website.

Artificial Intelligence, B.S.

Department Website

The Bachelor of Artificial Intelligence degree provides students the opportunity to gain cutting-edge AI knowledge and skills with a solid theoretical foundation as well as a good understanding of different application areas. This bachelor program prepares students for a productive career in industry, lifelong learning, and for graduate study in AI. The BS in AI is strategically designed to build on the strengths of existing computing programs on campus and produce well-rounded students with a balance between strong theoretical foundations as well as practical and hands-on technical skills. The program also includes a strong professional component for the development of skills in technical communication, ethics, and teamwork. The program was designed to satisfy the local and national industry needs and student learning perspectives.

Specific offerings for each semester may be found in the Schedule of Classes.

Program educational objectives

- Understand representations, algorithms and techniques used across works in Artificial Intelligence and be able to apply and evaluate them in applications as well as develop their own.
- Understand and apply machine-learning techniques, in particular to draw inferences from data and help automate the development of AI systems and components.
- Understand the various ways and reasons humans are integrated into mixed human-AI environments, whether it is to improve overall integrated system performance, improve AI performance or influence human performance and learning.
- Understand the ethical concerns in developing responsible AI technologies.
- Implement AI systems, model human behavior, and evaluate their performance.

Requirements for the major in Artificial Intelligence, B.S.

To earn the Bachelor of Science degree with a major in artificial intelligence students must complete a minimum of 128 credits and meet the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog.

Foundation

- Writing Foundations (WRT 1060)
- Formal Reasoning (Satisfied by MTH 1554; see Mathematics and Statistics)

Explorations

One course from each of the seven Explorations areas Arts

- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology
- Social Science
- Western Civilization (Satisfied by PHL 1310; see additional major requirements)

Integration

- Knowledge Applications (Satisfied by MTH 1555; see Mathematics and Statistics)

U.S. Diversity

- May be met by an approved course in the Explorations area.

Writing Intensive and Capstone

- Capstone (Satisfied by CSI 4999; see Required professional subjects)
- Writing Intensive in the Major (Satisfied by CSI 4999; see Required professional subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements

All students must complete the following requirement.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering

Mathematics and Statistics

- APM 2663 - Discrete Mathematics **(4)**
- MTH 1554 - Calculus I **(4)**
- MTH 1555 - Calculus II **(4)**
- MTH 2775 - Linear Algebra **(4)**
- STA 2226 - Applied Probability and Statistics **(4)**

Artificial Intelligence Core

- CSI 1420 - Introduction to C Programming and Unix **(4)** **or** CSI 1320 - Introduction to Python Programming and Unix **(4)**
- CSI 2300 - Object-Oriented Computing **(4)**
- CSI 2310 - Data Structures **(4)**
- CSI 2490 - Introduction to Artificial Intelligence: Representation, Concepts and Problem Solving **(4)**
- CSI 2999 - Sophomore Project **(2)**

Required professional subjects

- CSI 3370 - Software Engineering and Practice **(4)**
- CSI 3610 - Design and Analysis of Algorithms **(4)**
- CSI 4100 - Ethics and Bias in AI **(4)**
- CSI 4130 - Artificial Intelligence **(4)**
- CSI 4140 - Deep Learning and Applications **(4)**
- CSI 4150 - AI for IT Operations **(4)**
- CSI 4170 - Machine Learning **(4)**
- CSI 4180 - Natural Language Processing **(4)**
- CSI 4810 - Information Retrieval and Knowledge Discovery **(4)**
- CSI 4999 - Senior Capstone Project **(4)**

Professional track

Artificial Intelligence students must complete three professional track courses from the following areas and can choose courses from multiple tracks to customize their education. Those interested in gaining expertise in a specific area should select courses accordingly.

Edge AI and IoT Track

- CSI 4110 - Foundations of Edge AI **(4)**
- CSI 4230 - Mobile and Smart Phone Application Development **(4)**
- CSI 4240 - Cloud Computing **(4)**

Embedded AI Track

- ECE 4731 - Fundamentals of Embedded System Design **(4)**
- ECE 4900 - Special Topics **(4)**
Choose one from following courses:
- CSI 4110 - Foundations of Edge AI **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**

Human-Centered AI and Robotics Track

- CSI 4800 - AI-Human Interaction **(4)**
Choose two from following courses:

- CSI 3500 - Human Computer Interaction (4)
- CSI 4550 - Visual Computing (4)
- ECE 4500 - Robotic Systems and Control (4)
- ECE 4510 - Machine Vision (4)
- ECE 4551 - Human Robot Interaction (4)
- ISE 4422 - Robotic Systems (4)
- ISE 4441 - Human Factors Engineering (4)

AI for Cybersecurity and Trustworthy AI Track

- CSI 4580 - AI for Cybersecurity and Privacy (4)
Choose two from following courses:
- CSI 4370 - Software Verification and Testing (4)
- CSI 4520 - Industrial Control Security (4)
- CSI 4560 - Mobile Security (4)
- CSI 4700 - Software Security (4)
- CSI 4790 - Automotive Security (4)
- ECE 4780 - Embedded Security (4)

Augmented/Virtual Reality Track

- CSI 4550 - Visual Computing (4)
Choose one from following courses:
- CSI 3380 - Game Design (4)
- CSI 4380 - Game Programming (4)
- ECE 4510 - Machine Vision (4)

Smart Manufacturing and Industry 4.0 Track

Choose three from following courses:

- CSI 4800 - AI-Human Interaction (4)
- ECE 4551 - Human Robot Interaction (4)
- ISE 4410 - Supply Chain Modeling and Analysis (4)
- ISE 4423 - Industrial Automation Systems (4)
- ISE 4435 - Data Analytics (4)

Professional Electives

Students must complete a minimum of 6 additional credits in professional electives. Professional elective courses can be chosen from 3000-level or higher courses in CSI, BE, ECE, ISE, ME, APM, MOR, MTH, STA, BIO, CHM, or PHY, or from the approved courses listed below. No more than 2 credits of CSI 4950 (Internship) can be used to fulfill the professional electives requirement. Additionally, courses at the 5000-level require approval from the instructor.

Approved professional electives courses:

- CSI 2320 - C++ for Programmers (2)
- CSI 2330 - Immersive Python (2)

- CSI 2340 - Ruby for Web Developers (2)
- CSI 2350 - Programming in Visual C# for .NET Technology (2)
- CSI 2470 - Introduction to Computer Networks (4)
- CSI 2810 - Introduction to Data Science in Python (4)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4)

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science with a major in Artificial Intelligence, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Students can obtain the major standing form from the SECS Undergraduate Advising Website. When the application for major standing is approved, students with majors of Pre-Artificial Intelligence will have their major changed to Artificial Intelligence. Approval of both a major standing application and change of major to Artificial Intelligence is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Artificial Intelligence, students must:

A) have an average GPA of 2.0 in the following mathematics and statistics courses: MTH 1554, MTH 1555, APM 2663, and STA 2226.

B) have an average GPA of 2.0 in the following AI core courses: CSI 1420 or CSI 1320, CSI 2300, CSI 2310, CSI 2490, and CSI 2999.

C) have no more than two grades below C in the courses listed in A and B above.

D) have not attempted any course listed in A and B above more than three times; and

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance requirements

Satisfactory completion of the program requires an average grade of at least 2.0 within each group: mathematics and statistics, artificial intelligence core, and professional courses (including required professional subjects, professional electives, and professional track). Within the professional courses at most two different courses may be repeated, a total of three attempts per course is permitted, and at most two grades below C are permitted. A grade of C or better in CSI 4999 (Senior Capstone Project) must be received.

Sample artificial intelligence schedule

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year

Fall semester -- 16 credits

- MTH 1554 - Calculus I (4)
- CSI 1320 - Introduction to Python Programming and Unix (4) **or** CSI 1420 - Introduction to C Programming and Unix (4)

- General education (4)
- General education (4)

Winter semester -- 16 credits

- MTH 1555 - Calculus II (4)
- CSI 2300 - Object-Oriented Computing (4)
- STA 2226 - Applied Probability and Statistics (4)
- **General education (4)**

Sophomore year

Fall semester -- 16 credits

- APM 2663 - Discrete Mathematics (4)
- CSI 2310 - Data Structures (4)
- CSI 2490 - Introduction to Artificial Intelligence: Representation, Concepts and Problem Solving (4)
- **General education (4)**

Winter semester -- 18 credits

- MTH 2775 - Linear Algebra (4)
- CSI 2999 - Sophomore Project (2)
- **General education (4)**
- **General education (4)**
- **General education (4)**

Junior year

Fall semester -- 16 credits

- CSI 3370 - Software Engineering and Practice (4)
- CSI 3610 - Design and Analysis of Algorithms (4)
- CSI 4100 - Ethics and Bias in AI (4)
- **General education (4)**

Winter semester -- 16 credits

- CSI 4130 - Artificial Intelligence (4)
- CSI 4140 - Deep Learning and Applications (4)
- CSI 4150 - AI for IT Operations (4)
- **Professional track (4)**

Senior year

Fall semester -- 16 credits

- CSI 4170 - Machine Learning (4)
- CSI 4180 - Natural Language Processing (4)
- **Professional elective (4)**
- **Professional track (4)**

Winter semester -- 14 credits

- CSI 4810 - Information Retrieval and Knowledge Discovery (4)
- CSI 4999 - Senior Capstone Project (4)
- **Professional elective (2)**
- **Professional track (4)**

Bioengineering, B.S.

The B.S. in Bioengineering program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Bioengineering Program Criteria. In order to earn the degree of Bachelor of Science with a major in Bioengineering, students must complete a minimum of 129 credits including satisfying general education requirements. Bioengineering students must also complete all listed requirements for the following sections: Mathematics & Sciences, Engineering Core, and Required Professional Subjects.

Students will also broaden their knowledge in a specific area of Bioengineering by completing elective courses in the professional tracks requirement.

Students in this program are not required to complete the College of Arts and Sciences exploratory requirements but must complete the General Education Requirements including capstone and writing intensive courses.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for bioengineering, B.S.

General education - 28 credits

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below:

Foundations:

- Writing Foundations (WRT 1060)
- Formal Reasoning (satisfied by MTH 1554; see Mathematics and sciences section)

Explorations: One course from each of the seven

Explorations areas:

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (satisfied by EGR 2400 or EGR 2500; see Engineering Core)
- Social Science (satisfied by ECN 1500, ECN 2010, or ECN 2020; see Additional Major Requirements)
- Western Civilization (satisfied by PHL 1310 - Introduction to Ethics in Science and Engineering; see Additional Major Requirements)

Integration:

- Knowledge Applications (satisfied by MTH 1555, see Mathematics and Sciences)
- Capstone (satisfied by BE 4999; see Required professional subjects)

U.S. Diversity:

- May be met by an approved course in the Explorations area

Writing Intensive:

- Writing Intensive in the Major (satisfied by BE 4999; see Required Professional Subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements:

All bioengineering students must meet the following requirements. Courses from these selections can meet general education exploration areas above.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering
- Economics: Choose one from ECN 1500, ECN 2010, or ECN 2020

Mathematics and Sciences

- MTH 1554 - Calculus I **(4)**
- MTH 1555 - Calculus II **(4)**
- APM 2555 - Introduction to Differential Equations with Matrix Algebra **(4)**
- MTH 2554 - Multivariable Calculus **(4)** **or** APM 2663 - Discrete Mathematics **(4)**
- BIO 1200 - Biology I **(4)**
- BIO 1201 - Biology Laboratory **(1)**
- BIO 2600 - Human Physiology **(4)**
- BIO 3621 - Physiology Laboratory **(1)**
- PHY 1510 - Introductory Physics I **(4)**
- PHY 1520 - Introductory Physics II **(4)**
- PHY 3250 - Biological Physics **(4)**
- CHM 1440 - General Chemistry I **(4)** **and** CHM 1470 - General Chemistry Laboratory I **(1)**
- CHM 1450 - General Chemistry II **(4)** **and** CHM 1480 - General Chemistry Laboratory II **(1)**
- CHM 2340 - Organic Chemistry I **(4)**

Engineering Core

- EGR 1200 - Engineering Graphics and CAD **(1)**
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science **(4)**
- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)**
- EGR 2500 - Introduction to Thermal Engineering **(4)**
- EGR 2600 - Introduction to Industrial and Systems Engineering **(4)**
- EGR 2800 - Design and Analysis of Electromechanical Systems **(4)**

Required Professional Subjects

- BE 3150 - Bioinstrumentation (4)
- BE 3899 - Introduction to Engineering Biology (4)
- BE 4999 - Research Project/Capstone Design (4)

Professional Tracks

Students must complete 16 credits of elective courses from the professional tracks below. Courses can be selected from within one track if the student has a particular area of interest or any combination of courses listed under different tracks. A minimum of 12 credits used toward the professional track requirement must be from courses with engineering-based material.

Track 1: Biomedical Imaging and Signal Processing

- BE 4100 - Biomedical Signal Processing (4)
- BE 4110 - Medical Imaging (4)
- BE 4120 - Medical Image Analysis (4)
- PHY 3260 - Medical Physics (4)

Track 2: Bioinformatics and Genome Engineering

- BE 4200 - Genetic and Genomic Engineering (4)
- BIO 4412 - Functional Genomics and Bioinformatics (4)
- CSI 3450 - Database Design and Implementation (4)
- CSI 4780 - Bioinformatics (4)

Track 3: Molecular Engineering

- BE 4300 - Bioprocess Engineering (4)
 - BIO 3500 - General Microbiology (4) *
 - BIO 4550 - Microbial Biotechnology (4)
 - ME 3500 - Introduction to Fluid and Thermal Energy Transport (4)
- * This course does not satisfy the engineering-based material requirement

Track 4: Tissue Engineering

- BE 4400 - Tissue Engineering (4)
- BIO 3142 - Bioengineering Organs and Tissues (4)
- ME 3250 - Mechanics of Materials (4)
- ME 4210 - Analysis and Design of Mechanical Structures (4)
- BE 4900, BE 4996 and BE 4998 may also be selected to meet curriculum requirements. Prior approval is required to take these courses.

No Track Option

- Any 16 credits chosen from the tracks above. A minimum of 12 credits must be engineering-based material

Major Standing

To enroll in 3000 or higher-level courses and to become candidates for the B.S. in Bioengineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000 or higher-level courses. Forms may be obtained from the SECS Undergraduate advising office or from the SECS website. At the time that major standing is approved, students with majors of Pre-Bioengineering will have their major changed to Bioengineering. Approval of both a major standing application and change of major to Bioengineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing and be considered for a degree in Bioengineering, students must:

- A) have an average of at least C in the following mathematics and sciences courses: BIO 1200, BIO 1201, MTH 1554, MTH 1555, APM 2555, CHM 1440, and PHY 1510.
- B) have an average of at least C in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600 and EGR 2800.
- C) have no more than two grades below C in the courses listed in A and B above
- D) have not attempted any course listed in A and B above more than three times.
- E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each group: mathematics and sciences, engineering core, required professional subjects, and professional tracks and a grade of C or better in the research project/capstone design course (BE 4999). For required professional subjects and professional track courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three attempts per course are permitted.

Sample Bioengineering schedule

Students may follow a schedule such as the one indicated below

Freshman year

Fall semester - 17 credits

- BIO 1200 - Biology I **(4)**
- BIO 1201 - Biology Laboratory **(1)**
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science **(4)**
- MTH 1554 - Calculus I **(4)**
- **General Education (4)**

Winter semester - 17 credits

- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- MTH 1555 - Calculus II (4)
- PHY 1510 - Introductory Physics I (4)
- **General Education (4)**

Sophomore year

Fall semester - 17 credits

- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4)
- CHM 1440 - General Chemistry I (4)
- CHM 1470 - General Chemistry Laboratory I (1)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- **General Education (4)**

Winter semester - 16 credits

- EGR 2500 - Introduction to Thermal Engineering (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)
- MTH 2554 - Multivariable Calculus (4) **or** APM 2663 - Discrete Mathematics (4)
- **General Education (4)**

Junior year

Fall semester - 17 credits

- CHM 1450 - General Chemistry II (4)
- CHM 1480 - General Chemistry Laboratory II (1)
- BE 3150 - Bioinstrumentation (4)
- BE 3899 - Introduction to Engineering Biology (4)
- **General Education (4)**

Winter semester - 17 credits

- BIO 2600 - Human Physiology (4)
- BIO 3621 - Physiology Laboratory (1)
- CHM 2340 - Organic Chemistry I (4)
- PHY 1520 - Introductory Physics II (4)
- **General Education (4)**

Senior year

Fall semester -16 credits

- **Professional track (4)**

- **Professional track (4)**
- **Professional track (4)**
- **General Education (4)**

Winter semester - 12 credits

- BE 4999 - Research Project/Capstone Design (4)
- PHY 3250 - Biological Physics (4)
- **Professional track (4)**

Computer Science, B.S.

Department Website

The program leading to a Bachelor of Science degree in Computer Science equips students for a successful career in the industry and graduate studies in diverse disciplines. It emphasizes the development of crucial skills, such as formulating abstract concepts, creating innovative computational solutions, designing complex systems, and incorporating cutting-edge technologies. The curriculum not only establishes a robust foundation for lifelong learning but also integrates theoretical principles in information and computation, keeping students informed about the latest developments. With a strong focus on professional development, encompassing technical communication, ethical considerations, and teamwork, the program ensures that graduates are well-prepared for the dynamic demands of the computing landscape. The Bachelor of Science in Computer Science program is accredited by the Computing Accreditation Commission of ABET.

Program educational objectives

In the course of their careers, graduates of the Computer Science program will:

- Work productively in the creation, maintenance, and improvement of computing systems.
- Remain current in their profession through lifelong learning, including graduate school.
- Exhibit leadership and exercise their profession with the highest level of ethics, and social responsibility.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in computer science, B.S. program

To earn the Bachelor of Science degree with a major in computer science students must complete a minimum of 128 credits and meet the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of

the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below.

Foundations

- Writing Foundations (WRT 1060)
- Formal Reasoning (Satisfied by MTH 1554; see Mathematics and sciences)

Explorations: One course from each of the seven Explorations areas

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (Satisfied by an approved science elective with lab; see Mathematics and Sciences)
- Social Science
- Western Civilization (Satisfied by PHL 1310; see additional major requirements)

Integration

- Knowledge Applications (Satisfied by MTH 1555; see Mathematics and sciences)

U.S. Diversity

- May be met by an approved course in the Explorations area.

Writing Intensive and Capstone

- Capstone (Satisfied by CSI 4999; see Required professional subjects)
- Writing Intensive in the Major (Satisfied by CSI 4999; see Required professional subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements

All students must complete the following requirement.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an SECS Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Mathematics and science

- MTH 1554 - Calculus I **(4)**
- MTH 1555 - Calculus II **(4)**
- MTH 2775 - Linear Algebra **(4)**
- APM 2663 - Discrete Mathematics **(4)**
- STA 2226 - Applied Probability and Statistics **(4)**
- **Approved science elective with lab (5)**

Take one of the following biology, chemistry, or physics courses with the corresponding laboratory:

- BIO 1200 - Biology I **(4)** **and** BIO 1201 - Biology Laboratory **(1)**
- BIO 1300 - Biology II **(4)** **and** BIO 1201 - Biology Laboratory **(1)**
- CHM 1440 - General Chemistry I **(4)** **and** CHM 1470 - General Chemistry Laboratory I **(1)**
- PHY 1510 - Introductory Physics I **(4)** **and** PHY 1100 - General Physics Lab I **(1)**

Computer science core

- CSI 1320 - Introduction to Python Programming and Unix **(4)** **or** CSI 1420 - Introduction to C Programming and Unix **(4)**
- CSI 2300 - Object-Oriented Computing **(4)**
- CSI 2310 - Data Structures **(4)**
- CSI 2470 - Introduction to Computer Networks **(4)**
- CSI 2999 - Sophomore Project **(2)**

Required professional subjects

- CSI 3370 - Software Engineering and Practice **(4)**
- CSI 3430 - Theory of Computation **(4)**
- CSI 3450 - Database Design and Implementation **(4)**
- CSI 3480 - Security and Privacy in Computing **(4)**
- CSI 3610 - Design and Analysis of Algorithms **(4)**
- CSI 3640 - Computer Organization **(4)**
- CSI 4350 - Programming Languages **(4)**
- CSI 4500 - Operating Systems **(4)**
- CSI 4650 - Parallel and Distributed Computing **(4)**
- CSI 4999 - Senior Capstone Project **(4)**

Professional track

Select two courses from one of the following professional tracks:

Computational Intelligence Track

- CSI 4130 - Artificial Intelligence **(4)**
- CSI 4140 - Deep Learning and Applications **(4)**
- CSI 4170 - Machine Learning **(4)**
- CSI 4180 - Natural Language Processing **(4)**
- CSI 4550 - Visual Computing **(4)**
- CSI 4810 - Information Retrieval and Knowledge Discovery **(4)**

Decision Optimization Track

- MOR 3330 - Engineering Operations Research **(3)**
- CSI 4170 - Machine Learning **(4)**

System Administration Track

- CSI 3660 - System Administration **(4)**
- CSI 4660 - Enterprise System Administration **(4)**

Bioinformatics Track

- BIO 3400 - Genetics **(4)**
- CSI 4780 - Bioinformatics **(4)**

Cybersecurity Track

- CSI 4460 - Information Security **(4)**
- CSI 4480 - Information Security Practices **(4)**
- CSI 4560 - Mobile Security **(4)**
- CSI 4600 - Network Security **(4)**
- CSI 4700 - Software Security **(4)**
- APM 4347 - Mathematics of Cryptology **(4)**

Game Development Track

- CSI 3380 - Game Design **(4)**
- CSI 4380 - Game Programming **(4)**

Mobile Applications Development Track

- CSI 3150 - Web and Mobile Systems **(4)**
- CSI 4230 - Mobile and Smart Phone Application Development **(4)**

Web Development Track

- CSI 3150 - Web and Mobile Systems **(4)**
- CSI 4160 - Integrated Computing Systems **(4)**
- CSI 4510 - Advanced Web Design Application **(4)**

AI on Cloud Track

- CSI 4150 - AI for IT Operations **(4)**
- CSI 4240 - Cloud Computing **(4)**

Software Engineering Track

- CSI 4370 - Software Verification and Testing **(4)**
- CSI 4700 - Software Security **(4)**

Data Analysis Track

- CSI 3820 - Data Visualization **(3)**
- CSI 3860 - Contemporary Issues in Data Science **(3)**
- CSI 4820 - Big Data Analysis with Cloud Computing **(4)**

Students following older catalogs will be able to count courses under one of the tracks listed above to satisfy their professional track requirements.

Professional electives

Take 9 additional credits from the following courses.

Any 3000 or higher level CSI, BE, ECE, ISE, or ME designated courses. No more than 1-credit of CSI 4950 (Internship) can be used to fulfill the professional electives requirement. Courses at the 5000-level require approval of the instructor.

Any of the following 2000 level courses:*

- CSI 2320 - C++ for Programmers **(2)**
- CSI 2330 - Immersive Python **(2)**
- CSI 2340 - Ruby for Web Developers **(2)**
- CSI 2350 - Programming in Visual C# for .NET Technology **(2)**
- CSI 2810 - Introduction to Data Science in Python **(4)**

*Students who have not taken a course on C or Python as part of the core requirement, for example due to transfers from another institution, are encouraged to consider taking CSI 2320 or CSI 2330 as part of their professional electives.

Any math, science or engineering elective from the following:

- APM 2555 - Introduction to Differential Equations with Matrix Algebra **(4)**
- APM 3332 - Applied Matrix Theory **(4)**
- APM 4333 - Numerical Methods **(4)**
- APM 4334 - Applied Numerical Methods: Matrix Methods **(4)**
- APM 4663 - Applied Mathematics: Discrete Methods I **(4)**
- APM 4777 - Computer Algebra **(4)**
- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)**
- MTH 3552 - Complex Variables **(4)**
- PHY 1110 - General Physics Lab II **(1)**
- PHY 3250 - Biological Physics **(4)**
- PHY 3260 - Medical Physics **(4)**
- PHY 3310 - Optics **(4)**
- PHY 3660 - Vibrations and Waves **(4)**
- PHY 3710 - Foundations of Modern Physics **(4)**

Students who are interested in other upper level mathematics and natural sciences courses to satisfy their professional electives requirements should consult an academic adviser.

Minimum credit hour requirements in mathematics and sciences

Students must complete all five required mathematics and statistics courses for a minimum of 15 credits. Students with fewer than 15 credits of required mathematics and statistics, for example due to transfers from another institution, must take additional courses to satisfy the requirement. Any additional course must be approved by a petition of exception.

Computer science and data science double major

Students interested in pursuing a double major in computer science and data science are encouraged to consult with an academic adviser for a nine-semester course plan.

Major standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science with a major in Computer Science, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Students can obtain the major standing form from the SECS Undergraduate Advising Website. At the time that major standing is approved, students with majors of Pre-Computer Science will have their major

changed to Computer Science. Approval of both a major standing application and change of major to Computer Science is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Computer Science, students must:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2663 and an approved science elective with lab.

B) have an average GPA of 2.0 in the following computer science core courses: CSI 1320 or CSI 1420, CSI 2300, CSI 2310, CSI 2470, and CSI 2999.

C) have no more than two grades below C in the courses listed in A and B above.

D) have not attempted any course listed in A and B above more than three times.

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete requirements A and B above.

Students who have questions about petition of exception, transfer credit, academic standing, major standing, or any other aspects of their degree programs should consult an academic adviser and other relevant sections of the undergraduate catalog.

Performance requirements

Satisfactory completion of the program requires an average grade of at least 2.0 within each group: mathematics and sciences, computer science core, and professional courses (including required professional subjects, professional electives, and professional track). Within the professional courses at most two different courses may be repeated, a total of three attempts per course is permitted, and at most two grades below C are permitted. A grade of C or better in CSI 4999 (Senior Capstone Project) must be received.

Sample computer science schedule

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year

Fall semester -- 16 credits

- MTH 1554 - Calculus I **(4)**
- CSI 1320 - Introduction to Python Programming and Unix **(4)** **or** CSI 1420 - Introduction to C Programming and Unix **(4)**
- General education (4)
- General education (4)

Winter semester -- 17 credits

- CSI 2300 - Object-Oriented Computing **(4)**
- MTH 1555 - Calculus II **(4)**

- **Approved science elective with lab (5)**
- **General education (4)**

Sophomore year

Fall semester -- 16 credits

- APM 2663 - Discrete Mathematics **(4)**
- CSI 2310 - Data Structures **(4)**
- **General education (4)**
- **General education (4)**

Winter semester -- 18 credits

- MTH 2775 - Linear Algebra **(4)**
- CSI 2470 - Introduction to Computer Networks **(4)**
- CSI 2999 - Sophomore Project **(2)**
- **General education (4)**
- **General education (4)**

Junior year

Fall semester -- 16 credits

- STA 2226 - Applied Probability and Statistics **(4)**
- CSI 3480 - Security and Privacy in Computing **(4)**
- CSI 3610 - Design and Analysis of Algorithms **(4)**
- CSI 3640 - Computer Organization **(4)**

Winter semester -- 16 credits

- CSI 3370 - Software Engineering and Practice **(4)**
- CSI 3430 - Theory of Computation **(4)**
- CSI 4650 - Parallel and Distributed Computing **(4)**
- **Professional elective (4)**

Senior year

Fall semester -- 16 credits

- CSI 3450 - Database Design and Implementation **(4)**
- CSI 4350 - Programming Languages **(4)**
- **Professional elective (4)**
- **Professional track (4)**

Winter semester -- 13 credits

- CSI 4500 - Operating Systems (4)
- CSI 4999 - Senior Capstone Project (4)
- **Professional elective (1)**
- **Professional track (4)**

Computer Science, B.S., Concentration in Cybersecurity

Department Website

The Department of Computer Science and Engineering offers an optional concentration in Cybersecurity to students interested in broadening their knowledge in this specific area of computing and wishing this area of concentration in their degree. The concentration is available to, but not required of, any student enrolled in the Bachelor of Science degree in Computer Science. The concentration will be noted on the transcript of the students. Students may earn only one concentration and the concentration must be completed as part of their degree.

Requirements for the Computer Science, B.S., Concentration in Cybersecurity

To earn a Bachelor of Science degree in Computer Science with a concentration in Cybersecurity, students must complete the following sequence of courses to satisfy their professional track and professional electives requirements of the Bachelor of Science degree in Computer Science. See Computer Science degree requirements for detail. Students who are interested in the concentration are advised to select Cybersecurity Track and to consult an academic adviser for guidance on course selection. Completing the concentration requires a minimum of 128 credits.

Primary Subjects

Select at least three courses

- CSI 4460 - Information Security (4)
- CSI 4480 - Information Security Practices (4)
- CSI 4700 - Software Security (4)
- APM 4347 - Mathematics of Cryptology (4)

Additional Subjects

Select a course if only three are selected from the primary subjects

- CSI 3660 - System Administration (4)
- CSI 3680 - Script Programming (4)
- CSI 4240 - Cloud Computing (4)
- CSI 4660 - Enterprise System Administration (4)

Note

Students can substitute one of the additional subjects with at least 3 credits of CSI 4900 (Special Topics), CSI 4995 (Undergraduate Research), or CSI 4996 (Independent Study) provided that the coursework is in the area of cybersecurity. Approvals of both the instructor and the chair of the Department of Computer Science and Engineering are required for such a substitution.

Computer Science, B.S., Specialization in Artificial Intelligence

Department Website

The Department of Computer Science and Engineering offers an optional specialization in Artificial Intelligence to students interested in broadening their knowledge in this specific area of computer science and wishing this area of specialization in their degree. This specialization is only applicable for any student enrolled in the Bachelor of Science degree in Computer Science. The specialization will be noted on the transcript of the students.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Artificial Intelligence Specialization

To earn a Bachelor of Science degree in Computer Science with a specialization in Artificial Intelligence, students must complete the following sequence of courses to satisfy their professional track and professional electives requirements of the Bachelor of Science degree in Computer Science. Students who are interested in the specialization are advised to select the Computational Intelligence Track. See Computer Science, B.S. for degree requirements.

In general, students may require up to 131 credits to complete the specialization. However, by careful selection of courses students may be able to complete the specialization with no more than 128 credits. Students who are interested in the specialization should consult an academic adviser for guidance on course selection. Students may earn only one specialization and the specialization must be completed as part of their degree.

Primary Subject

Select one of the following courses

- CSI 4130 - Artificial Intelligence (4)
- CSI 4140 - Deep Learning and Applications (4)
- CSI 4170 - Machine Learning (4)

Additional Subjects

Select additional three courses from the following

- CSI 4130 - Artificial Intelligence (4)
- CSI 4140 - Deep Learning and Applications (4)
- CSI 4170 - Machine Learning (4)
- CSI 4180 - Natural Language Processing (4)
- CSI 4550 - Visual Computing (4)
- CSI 4810 - Information Retrieval and Knowledge Discovery (4)

Note

Students can substitute one of the additional subjects with at least 3 credits of CSI 4900 (Special Topics), CSI 4995 (Undergraduate Research), or CSI 4996 (Independent Study) provided that the coursework is in the area of artificial intelligence. Approvals of both the instructor and the chair of the Department of Computer Science and Engineering are required for such a substitution.

Cybersecurity, B.S.

Department Website

The Bachelor of Cybersecurity degree provides students the opportunity to gain cutting-edge cybersecurity knowledge and skills with a solid theoretical foundation as well as a good understanding of the social, ethical, legal, and policy aspects of cybersecurity. This bachelor program prepares students for a productive career in industry, lifelong learning, and for graduate study in Cybersecurity. The new degree is strategically designed to build on the strengths of existing computing programs on campus and produce well-rounded students with a balance between strong theoretical foundations as well as practical and hands-on technical skills. The program also includes a strong professional component for the development of skills in technical communication, ethics, and teamwork.

Program educational objectives

In the course of their careers, graduates of the BS in Cybersecurity program will:

- Work productively in the creation, maintenance, administration, and improvement of secure computing systems and associated infrastructure.
- Remain current in their profession through lifelong learning, including graduate school.
- Exhibit leadership and exercise their profession with the highest level of ethics, and social responsibility.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Cybersecurity, B.S.

To earn the Bachelor of Science degree with a major in cybersecurity students must complete a minimum of 128 credits and meet the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below.

Foundations

- Writing Foundations (WRT 1060)
- Formal Reasoning (Satisfied by MTH 1554; see Mathematics and sciences)

Explorations: One course from each of the seven Explorations areas

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (Satisfied by an approved science elective with lab; see Mathematics and Sciences)
- Social Science
- Western Civilization (Satisfied by PHL 1310; see additional major requirements)

Integration

- Knowledge Applications (Satisfied by MTH 1555; see Mathematics and sciences)

U.S. Diversity

- May be met by an approved course in the Explorations area

Writing Intensive and Capstone

- Capstone (Satisfied by CSI 4999; see Required professional subjects)
- Writing Intensive in the Major (Satisfied by CSI 4999; see Required professional subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional major requirements

All students must complete the following requirement.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with SECS Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Math and Statistics

- MTH 1554 - Calculus I **(4)**
- MTH 1555 - Calculus II **(4)**

- APM 2663 - Discrete Mathematics **(4)**
- STA 2226 - Applied Probability and Statistics **(4)**

Cybersecurity Core

- CSI 1420 - Introduction to C Programming and Unix **(4)**
- CSI 2300 - Object-Oriented Computing **(4)**
- CSI 2440 - Computer Systems **(4)**
- CSI 2460 - Fundamentals of Cybersecurity **(4)**
- CSI 2470 - Introduction to Computer Networks **(4)**
- CSI 2999 - Sophomore Project **(2)**

Required professional subjects

- CSI 3370 - Software Engineering and Practice **(4)**
- CSI 3450 - Database Design and Implementation **(4)**
- CSI 3660 - System Administration **(4)**
- CSI 4240 - Cloud Computing **(4)**
- CSI 4460 - Information Security **(4)**
- CSI 4480 - Information Security Practices **(4)**
- CSI 4600 - Network Security **(4)**
- CSI 4700 - Software Security **(4)**
- CSI 4740 - Cyber Laws and Digital Forensics **(4)**
- CSI 4999 - Senior Capstone Project **(4)**

Professional track

Cybersecurity students must complete three professional track courses from the following areas and can choose courses from multiple tracks to customize their education. Those interested in gaining expertise in a specific area should select courses accordingly.

Secure System Integration Track

Select any three courses

- CSI 3680 - Script Programming **(4)**
- CSI 4230 - Mobile and Smart Phone Application Development **(4)**
- CSI 4430 - IT Project Management **(4)**
- CSI 4660 - Enterprise System Administration **(4)**

Software Security Track

- CSI 4370 - Software Verification and Testing **(4)**
- CSI 4560 - Mobile Security **(4)**
- CSI 4880 - Reverse Engineering and Malware Analysis **(4)**

AI in Cybersecurity Track

- CSI 4130 - Artificial Intelligence **(4)***
- CSI 4580 - AI for Cybersecurity and Privacy **(4)**
- CSI 4590 - Multimedia Forensics **(4)**

*Students interested in taking CSI 4130 should select CSI 3620 as a professional elective.

Cyber Physical System Security Track

ECE 4731 - Fundamentals of Embedded System Design **(4)**

Choose two from following three:

- CSI 4520 - Industrial Control Security **(4)**
- CSI 4790 - Automotive Security **(4)**
- ECE 4780 - Embedded Security **(4)**

Professional Electives

Students must complete a minimum of 6 additional credits in professional electives. Professional elective courses can be chosen from 3000-level or higher courses in CSI, BE, ECE, ISE, ME, APM, MOR, MTH, STA, BIO, CHM, or PHY, or from the approved courses listed below. No more than 2 credits of CSI 4950 (Internship) can be used to fulfill the professional electives requirement. Additionally, courses at the 5000-level require approval from the instructor.

Approved professional electives courses:

- CSI 2310 - Data Structures **(4)**
- CSI 2320 - C++ for Programmers **(2)**
- CSI 2330 - Immersive Python **(2)**
- CSI 2340 - Ruby for Web Developers **(2)**
- CSI 2350 - Programming in Visual C# for .NET Technology **(2)**
- CSI 2810 - Introduction to Data Science in Python **(4)**
- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)**
- APM 2555 - Introduction to Differential Equations with Matrix Algebra **(4)**
- MTH 2775 - Linear Algebra **(4)**

Major standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science with a major in Cybersecurity, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Students can obtain the major standing form from the SECS Undergraduate Advising Website. When the application for major standing is approved, students with majors of Pre-Cybersecurity will have their major changed to Cybersecurity. Approval of both a major standing application and change of major to Cybersecurity is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Cybersecurity, students must:

A) have an average GPA of 2.0 in the following mathematics and statistics courses: MTH 1554, MTH 1555, APM 2663, and STA 2226.

B) have an average GPA of 2.0 in the following cybersecurity core courses: CSI 1420, CSI 2300, CSI 2460, CSI 2470, and CSI 2999.

C) have no more than two grades below C in the courses listed in A and B above.

D) have not attempted any course listed in A and B above more than three times.

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete requirements A and B above.

Performance requirements

Satisfactory completion of the program requires an average grade of at least 2.0 within each group: mathematics and statistics, cybersecurity core, and professional courses (including required professional subjects, professional electives, and professional track). Within the professional courses at most two different courses may be repeated, a total of three attempts per course is permitted, and at most two grades below C are permitted. A grade of C or better in CSI 4999 (Senior Capstone Project) must be received.

Sample cybersecurity schedule

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year

Fall semester -- 16 credits

- MTH 1554 - Calculus I **(4)**
- CSI 1420 - Introduction to C Programming and Unix **(4)**
- **General education (4)**
- **General education (4)**

Winter semester -- 16 credits

- MTH 1555 - Calculus II **(4)**
- CSI 2300 - Object-Oriented Computing (4)
- General education (4)
- General education (4)

Sophomore year

Fall semester -- 16 credits

- APM 2663 - Discrete Mathematics **(4)**
- CSI 2440 - Computer Systems (4)
- CSI 2460 - Fundamentals of Cybersecurity **(4)**
- General education (4)

Winter semester -- 18 credits

- CSI 2470 - Introduction to Computer Networks **(4)**
- CSI 2999 - Sophomore Project **(2)**
- STA 2226 - Applied Probability and Statistics **(4)**
- **General education (4)**
- **General education (4)**

Junior year

Fall semester -- 16 credits

- CSI 3370 - Software Engineering and Practice **(4)**
- CSI 3450 - Database Design and Implementation **(4)**
- CSI 3660 - System Administration **(4)**
- General education (4)

Winter semester -- 16 credits

- CSI 4240 - Cloud Computing **(4)**
- CSI 4460 - Information Security **(4)**
- CSI 4600 - Network Security **(4)**
- Professional track (4)

Senior year

Fall semester -- 16 credits

- CSI 4480 - Information Security Practices **(4)**
- CSI 4700 - Software Security **(4)**
- **Professional elective (4)**
- **Professional track (4)**

Winter semester -- 14 credits

- CSI 4740 - Cyber Laws and Digital Forensics **(4)**
- CSI 4999 - Senior Capstone Project **(4)**
- **Professional elective (2)**
- **Professional track (4)**

Data Science Engineering, B.S.

Department Website

The program in Data Science Engineering leading to a Bachelor of Science degree prepares students for a productive career in the industry and for graduate studies in diverse disciplines. The curriculum integrates quantitative analysis and computer science,

setting it apart from other fields. Through hands-on projects and practical exploration of programming languages like Python and R, students delve into machine learning algorithms, data visualization techniques, and database management, gaining invaluable insights into complex dataset analysis. The curriculum places a strong emphasis on data ethics, ensuring graduates are adept at responsibly navigating diverse contexts. Capstone projects encourage the application of knowledge to solve complex problems, fostering critical thinking and innovation. With a strong focus on professional development, including technical communication and teamwork, the program ensures that graduates are well-prepared for a dynamic career in data science, equipping them with the skills and knowledge needed to excel in the rapidly evolving field.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Program educational objectives

In the course of their careers, graduates of the Data Science Engineering program will:

- Work productively to design, implement, and improve solution to data problems.
- Remain current in their profession through lifelong learning, including graduate school.
- Exhibit teamwork and leadership as well as exercise their profession with the highest level of ethics and social responsibility.

Requirements for the Bachelor of Science in Data Science Engineering

To earn a Bachelor of Science degree with a major in Data Science Engineering students must complete a minimum of 128 credits and meet the following requirements:

General Education Requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below.

Foundations

- Writing Foundations (WRT 1060)
- Formal Reasoning (Satisfied by MTH 1554; see Mathematics and Statistics)

Explorations: One course from each of the seven areas

- Arts
- Language and Culture
- Global Perspective - ECN 2020 will satisfy the Global Perspective General Education requirement and act as a prerequisite for students pursuing the Economics Application Area.
- Literature

- Natural Science and Technology (Satisfied by Approved Science Elective) - BIO 1200 will satisfy the Natural Science and Technology General Education requirement and act as a prerequisite for students pursuing the Genomics Application Area.
- Social Science - PS 1100 will satisfy the Social Science General Education requirement and act as a prerequisite for students pursuing the Politics Application Area. ECN 2010 will satisfy the Social Science General Education requirement and act as a prerequisite for students pursuing the Economics or Risk Management Application Areas.
- Western Civilization (Satisfied by PHL 1310; see Additional Major Requirements)

Integration

- Knowledge Applications (satisfied by MTH 1555; see Mathematics and Statistics)

U.S. Diversity

- May be met by an approved course in the Explorations area

Capstone and Writing Intensive

- Capstone (satisfied by CSI 4990; see Required Professional Subjects)
- Writing Intensive in the Major (satisfied by CSI 4990; see Required Professional Subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements

All Data Science Engineering students must complete the following requirement. The course also satisfies the Western Civilization General Education requirement.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering

Mathematics and Statistics

Mathematics and Statistics

- MTH 1554 - Calculus I **(4)**
- MTH 1555 - Calculus II **(4)**
- MTH 2775 - Linear Algebra **(4)**
- APM 2663 - Discrete Mathematics **(4)**
- STA 2226 - Applied Probability and Statistics **(4)**
- STA 4002 - Applied Linear Models I **(4)** **or** STA 4111 - Statistical Methods in Data Science **(4)**

Approved Science Elective

Take one of the following: BIO 1200, BIO 1300, BIO 3000, (CHM 1440 and CHM 1470), CHM 3000, ENV 3080, HS 2000, LIN 1182, PHY 1060, PHY 1200, or (PHY 1510 and PHY 1100).

Data Science Engineering Core

- CSI 1320 - Introduction to Python Programming and Unix **(4)**
- CSI 2300 - Object-Oriented Computing **(4)**
- CSI 2310 - Data Structures **(4)**
- CSI 2810 - Introduction to Data Science in Python **(4)**
- CSI 2999 - Sophomore Project **(2)**

Required Professional Subjects

- CSI 3450 - Database Design and Implementation **(4)**
- CSI 3480 - Security and Privacy in Computing **(4)**
- CSI 3610 - Design and Analysis of Algorithms **(4)**
- CSI 3820 - Data Visualization **(3)**
- CSI 3860 - Contemporary Issues in Data Science **(3)**
- CSI 4810 - Information Retrieval and Knowledge Discovery **(4)**
- CSI 4820 - Big Data Analysis with Cloud Computing **(4)**
- STA 4840 - Introduction to R for Data Science **(4)**
- CSI 4990 - Data Science Capstone **(4)**

Professional Elective Courses

Students must complete three professional elective courses. At least two of them must be from Group A. Any remaining course can be from either Group A or Group B.

Group A

- CSI 3370 - Software Engineering and Practice **(4)**
- CSI 4130 - Artificial Intelligence **(4)**
- CSI 4140 - Deep Learning and Applications **(4)**
- CSI 4170 - Machine Learning **(4)**
- CSI 4180 - Natural Language Processing **(4)**
- CSI 4240 - Cloud Computing **(4)**
- CSI 4450 - Database System I **(4)**
- CSI 4780 - Bioinformatics **(4)**
- ISE 4435 - Data Analytics **(4)**

Group B

- Any CSI or STA designated course numbered 3000 or higher

Application Area Courses

Students are required to take two courses from an area in which knowledge of Data Science Engineering can be applied, and the application area courses should be completed before taking CSI 4990 (Data Science Capstone). At most one of the courses used to satisfy the application area requirement may also be used to meet the general education requirement. The application area courses need not to be from a single rubric or department but together they should provide a context for Data Science Engineering activities. A list of application area courses is provided below. If students are interested in selecting the application area courses from outside the provided list, they are advised to work with a faculty adviser from the Department of Computer Science and Engineering to get the application area courses approved before taking such courses. General Elective credits may be needed to meet the 128 credits required depending on chosen Application Area.

Advertising

1. PR 2400 - Introduction to Advertising **(4)**

2. One of:

- PR 3410 - Advertising Agency Workshop **(4)**
- PR 3420 - Advertising Creative Strategy **(4)**

Cybercrime

1. CRJ 1100 - Introduction to Criminal Justice **(4)**

2. CRJ 3341 - Cybercrime **(4)**

Economics

1. ECN 3020 - Intermediate Macroeconomics **(3)**

2. One of:

- ECN 3100 - Economics of Energy and the Environment **(3)**
- ECN 3260 - International Economic Development **(3)**
- ECN 3670 - Economics of Health Care **(3)**

Prerequisites for the Economics Application Area: ECN 2010 and ECN 2020

Environment

1. One of:

- ENV 3120 - Energy and the Environment **(4)**
- ENV 3550 - Public and Environmental Health **(3)**
- ENV 3540 - Global Environmental Governance **(4)**

2. ENV 4520 - Geographic Information System Analysis for Sustainability **(4)**

Genomics

1. BIO 3400 - Genetics **(4)**

2. One of:

- BE 4200 - Genetic and Genomic Engineering **(4)**
- BIO 4400 - Advanced Genetics **(4)**
- BIO 4412 - Functional Genomics and Bioinformatics **(4)**

Prerequisite for the Genomics Application Area: BIO 1200

Health

1. HS 2000 - Introduction to Health and Health Behaviors **(3)**

2. One of:

- HS 3430 - Sociology of Health and Medicine **(4)**
- PH 3000 - Introduction to Public Health **(3)**
- **WHP 3500 - Health Program Implementation (4)**
- WHP 4850 - Population Health, Health Policy, and Healthcare Delivery **(4)**

Malware Detection

1. CSI 2470 - Introduction to Computer Networks **(4)**

2. One of:

- CSI 4460 - Information Security **(4)**
- CSI 4480 - Information Security Practices **(4)**

Politics

1. Two of:

- PS 3160 - Media and Politics **(4)**
- PS 3165 - Elections and Voting Behavior **(4)**
- PS 3230 - Public Opinion **(4)**
- PS 3235 - Politics and the Internet **(4)**

Prerequisite for the Politics Application Area: PS 1100.

Risk Management

1. ECN 3500 - Insurance and Risk Management **(3)**

2. One of:

- ACC 2000 - Financial Accounting **(4)**
- ISE 4455 - Foundations of Safety Engineering **(4)**
- ISE 4456 - Engineering Risk Analysis **(4)**

Prerequisite for the Risk Management Application Area: ECN 2010.

Supply Chain Management

1. Two of:

- ISE 4410 - Supply Chain Modeling and Analysis **(4)**
- POM 3430 - Operations Management **(3)**
- POM 4420 - Supply Chain Management **(3)**

Data Science Engineering and Computer Science Double Major

Students interested in pursuing a double major in Data Science Engineering and Computer Science are encouraged to consult with an academic adviser for a nine-semester course plan.

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science with a major in Data Science Engineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Students can obtain the major standing form from the SECS Undergraduate Advising Website. When the application for major standing is approved, students with majors of Pre-Data Science Engineering will have their major changed to Data Science Engineering. Approval of both a major standing application and change of major to Data Science Engineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Data Science Engineering, students must:

A) have an average GPA of 2.0 in the following mathematics and statistics courses: MTH 1554, MTH 1555, and STA 2226.

B) have an average GPA of 2.0 in the following Data Science Engineering core courses: CSI 1320, CSI 2300, CSI 2310, CSI 2810, and CSI 2999.

C) have no more than two grades below C in the required courses in A and B above.

D) have not attempted any course listed in A and B above more than three times.

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Students who have questions about petition of exception, transfer credit, academic standing, major standing, or any other aspects of their degree programs should consult an academic adviser and other relevant sections of the undergraduate catalog.

Performance Requirements

Satisfactory completion of the program requires an average grade of at least 2.0 within each group: mathematics and statistics, and approved science elective; Data Science Engineering core; professional courses which includes required professional subjects, professional electives, and application area courses. Within the professional courses at most two different courses may be repeated, a total of three attempts per course is permitted, and at most two grades below C are permitted. A grade of C or better in CSI 4990 (Data Science Capstone) must be received.

Sample Data Science Engineering Schedule

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman

Fall

- CSI 1320 - Introduction to Python Programming and Unix **(4)**
- MTH 1554 - Calculus I **(4)**
- **General Education (4)**
- **General Education (4)**
- Total credits: 16

Winter

- CSI 2300 - Object-Oriented Computing **(4)**
- MTH 1555 - Calculus II **(4)**
- **General Education (4)**
- **General Education (4)**
- Total credits: 16

Sophomore

Fall

- APM 2663 - Discrete Mathematics **(4)**
- CSI 2810 - Introduction to Data Science in Python **(4)**
- **Approved science elective (4)**

- **General Education (4)**
- Total credits: 16

Winter

- CSI 2310 - Data Structures **(4)**
- CSI 2999 - Sophomore Project **(2)**
- MTH 2775 - Linear Algebra **(4)**
- STA 2226 - Applied Probability and Statistics **(4)**
- **General Education (4)**
- Total credits: 18

Junior

Fall

- CSI 3450 - Database Design and Implementation **(4)**
- CSI 3610 - Design and Analysis of Algorithms **(4)**
- CSI 3860 - Contemporary Issues in Data Science **(3)**
- **General Education (4)**
- Total credits: 15

Winter

- CSI 3820 - Data Visualization **(3)**
- CSI 3480 - Security and Privacy in Computing **(4)**
- STA 4111 - Statistical Methods in Data Science **(4)**
- **Application area course (4)**
- Total credits: 15

Senior

Fall

- STA 4840 - Introduction to R for Data Science **(4)**
- **Application area course (4)**
- **Professional elective course (4)**
- **Professional elective course (4)**
- Total credits: 16

Winter

- CSI 4810 - Information Retrieval and Knowledge Discovery **(4)**
- CSI 4820 - Big Data Analysis with Cloud Computing **(4)**
- CSI 4990 - Data Science Capstone **(4)**
- **Professional elective course (4)**
- Total credits: 16

Data Science Engineering, B.S., Concentration in Artificial Intelligence

Department Website

The Department of Computer Science and Engineering offers an optional concentration in Artificial Intelligence to students interested in broadening their knowledge in this specific area of Data Science Engineering and wishing the area of concentration in their degree. The concentration is available to, but not required of, any student enrolled in the Bachelor of Science degree in Data Science Engineering. The concentration will be noted on the transcript of the students. Students may earn more than one concentration, and the concentration must be completed as part of their degree.

See Data Science Engineering, B.S. and adviser for complete details on concentration.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Data Science Engineering with a concentration in Artificial Intelligence, B.S. program

To earn a Bachelor of Science degree in Data Science Engineering with a concentration in Artificial Intelligence, students must complete the following sequence of courses to satisfy their professional elective area requirements of the Bachelor of Science degree in Data Science Engineering. To complete the concentration with 128 credits, students should strategically select an application area course also to count as a general education course. See Data Science Engineering degree requirements for detail. Students who are interested in the concentration are advised to consult an academic adviser for guidance on course selection.

Required subjects

Take the following four courses

- CSI 4130 - Artificial Intelligence (4)
- CSI 4140 - Deep Learning and Applications (4)
- CSI 4170 - Machine Learning (4)
- CSI 4180 - Natural Language Processing (4)

Note

Students can substitute at most one of the required subjects with at least 3 credits of CSI 4900 (Special Topics), CSI 4995 (Undergraduate Research), or CSI 4996 (Independent Study) provided that the coursework is in the area of artificial intelligence. Approvals of both the instructor and the chair of the Department of Computer Science and Engineering are required for such a substitution.

Engineering Chemistry, B.S.

Department Website

The program in engineering chemistry, which is offered by the Department of Chemistry in cooperation with the School of Engineering and Computer Science, leads to the Bachelor of Science degree with a major in engineering chemistry. It is intended for well-qualified students who seek a basic preparation in engineering along with a highly professional chemistry program. Students in this program are not required to complete the College of Arts and Sciences college exploratory requirements. To earn the degree of Bachelor of Science with a major in engineering chemistry, students must complete a minimum of 128 credits, satisfy writing requirement (also see Undergraduate degree requirements) and meet the following requirements:

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in engineering chemistry, B.S. program

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below.

Foundations:

- Writing Foundations - WRT 1060
- Formal Reasoning (satisfied by MTH 1554; see Mathematics and Sciences)

Explorations: One course from each of the seven Explorations areas:

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (satisfied by EGR 2400 or EGR 2500; see Engineering Core)
- Social Science
- Western Civilization (satisfied by PHL 1310; see Additional Major Requirements)

Integration:

- Knowledge Applications (satisfied by MTH 1555; see Mathematics and Sciences)
- Capstone (satisfied by ME 4999 or CHM 4996; see Required Professional Subjects)

U.S. Diversity:

- May be met by an approved course in the Explorations area

Writing Intensive:

- Writing Intensive in the Major (satisfied by ME 4999 or CHM 4996; see Required Professional Subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements:

All engineering chemistry students must meet the following requirement. This course can meet general education exploration areas above.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an SECS Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Mathematics and Sciences

- MTH 1554 - Calculus I (4)
- MTH 1555 - Calculus II (4)
- MTH 2554 - Multivariable Calculus (4)
- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4)
- PHY 1510 - Introductory Physics I (4)
- PHY 1520 - Introductory Physics II (4)
- CHM 1440 - General Chemistry I (4) **and** CHM 1470 - General Chemistry Laboratory I (1)
- CHM 1450 - General Chemistry II (4) **and** CHM 1480 - General Chemistry Laboratory II (1)

Engineering Core

- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- EGR 2500 - Introduction to Thermal Engineering (4)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)

Required Professional Subjects

- CHM 2340 - Organic Chemistry I (4)
- CHM 2350 - Organic Chemistry II (4)
- CHM 2370 - Organic Chemistry Laboratory (2)
- CHM 3250 - Analytical Chemistry (4)
- CHM 3420 - Physical Chemistry I (4)
- CHM 3430 - Physical Chemistry II (4)
- CHM 3480 - Physical Chemistry Laboratory (2)
- CHM 4710 - Structure and Synthesis of Polymers (3)
- ME 3500 - Introduction to Fluid and Thermal Energy Transport (4)
- **One lecture or laboratory course above CHM 4000 (3); Note: CHM 3620 may satisfy this requirement.**
- ME 4999 - Senior Mechanical Engineering Design Project (4) **or** CHM 4996 - Independent Research (3)

Professional Electives

Students must complete a minimum of 8 credits from:

- ME 4500 - Energy Systems Analysis and Design (4)
- ME 4510 - Intermediate Fluid Mechanics (4)
- ME 4520 - Intermediate Heat Transfer (4)
- ME 4540 - Internal Combustion Engines I (4)
- ME 4550 - Fluid and Thermal Systems Design (4)
- ECE 4400 - Automatic Control Systems (4)

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science with a major in Engineering Chemistry, students must gain major standing in Engineering Chemistry. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Forms may be obtained from the SECS Undergraduate advising office or from the SECS website. At the time that major standing is approved, students with majors of Pre-Engineering Chemistry will have their major changed to Engineering Chemistry. Approval of both a major standing application and change of major to Engineering Chemistry is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Engineering Chemistry, students must meet the following requirements:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, PHY 1510, PHY 1520, CHM 1440, CHM 1450, CHM 1470 and CHM 1480.

B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600 and EGR 2800.

C) have no more than two grades below C in the required courses in A and B above.

D) have not attempted any course listed in A and B above more than three times.

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance requirements and additional general education notes

Students must complete the university's General Education Requirements, including the capstone course of either CHM 4996 or ME 4999 (see Undergraduate Degree Requirements). In addition to the previously stated requirements, satisfactory completion of the program requires an average grade of at least C in the courses taken to satisfy the engineering and chemistry requirements and in the courses prescribed for the mathematics and science requirements.

Sample Engineering Chemistry schedule

Freshman year

Fall Semester -- 18 credits

- CHM 1440 - General Chemistry I (4)
- CHM 1470 - General Chemistry Laboratory I (1)
- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- MTH 1554 - Calculus I (4)
- **General Education Course (4)**

Winter Semester -- 17 credits

- CHM 1450 - General Chemistry II (4)
- CHM 1480 - General Chemistry Laboratory II (1)
- MTH 1555 - Calculus II (4)
- PHY 1510 - Introductory Physics I (4)
- **General Education Course (4)**

Sophomore year

Fall Semester -- 16 credits

- CHM 2340 - Organic Chemistry I (4)
- MTH 2554 - Multivariable Calculus (4)
- PHY 1520 - Introductory Physics II (4)
- **General Education Course (4)**

Winter Semester -- 18 credits

- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4)
- CHM 2350 - Organic Chemistry II (4)
- CHM 2370 - Organic Chemistry Laboratory (2)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- **General Education Course (4)**

Junior year

Fall Semester -- 16 credits

- CHM 3250 - Analytical Chemistry (4)
- EGR 2500 - Introduction to Thermal Engineering (4)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- **General Education Course (4)**

Winter Semester -- 16 credits

- CHM 3420 - Physical Chemistry I (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)
- ME 3500 - Introduction to Fluid and Thermal Energy Transport (4)

- **General Education Course (4)**

Senior year

Fall Semester -- 14 credits

- CHM 3430 - Physical Chemistry II (4)
- CHM 4710 - Structure and Synthesis of Polymers (3)
- **CHM Lecture or Laboratory above CHM 4000 (3)**
- **Professional Elective (4)**

Winter Semester -- 13 - 14 credits

- CHM 3480 - Physical Chemistry Laboratory (2)
- CHM 4996 - Independent Research (3) **or** ME 4999 - Senior Mechanical Engineering Design Project (4)
- **Professional Elective (4)**
- **General Education Course (4)**

Engineering Physics, B.S.

Department Website

Engineering physics is an interdisciplinary field at the intersection of engineering and physics. Oakland University's undergraduate program in engineering physics is designed to provide students with (i) an in-depth scientific understanding of the construction of physical reality, and (ii) practical engineering knowledge of how to apply this understanding to state-of-the-art technologies. The program offers strong fundamentals in quantum mechanics, electromagnetism, vibrations and waves, as well as a solid foundation in core engineering skills. Students can choose from a technology depth area in solid-state physics or applied mechanics. To earn the degree of Bachelor of Science with a major in engineering physics, students must complete a minimum of 128 credits, demonstrate writing proficiency (see Undergraduate degree requirements) and meet the following requirements:

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Engineering Physics, B.S.

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity, and Capstone. For details, refer to the General Education section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below.:

Foundations:

- Writing Foundations - WRT 1060
- Formal Reasoning (satisfied by MTH 1554; see Mathematics and Sciences)

Explorations: One course from each of the seven Explorations areas:

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (satisfied by EGR 2400 or EGR 2500; see Engineering Core)
- Social Science
- Western Civilization (satisfied by PHL 1310; see Additional Major Requirements)

Integration:

- Knowledge Applications (satisfied by MTH 1555; see Mathematics and Sciences)
- Capstone (satisfied by PHY 4995; see Required Professional Subjects)

U.S. Diversity:

- May be met by an approved course in the Explorations area

Writing Intensive:

- Writing Intensive in the Major (satisfied by PHY 4995; see Required Professional Subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements:

All engineering physics students must meet the following requirement. This course can meet general education exploration areas above.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an SECS Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Mathematics and sciences

- MTH 1554 - Calculus I **(4)**
- MTH 1555 - Calculus II **(4)**
- MTH 2554 - Multivariable Calculus **(4)**
- APM 2555 - Introduction to Differential Equations with Matrix Algebra **(4)**
- CHM 1440 - General Chemistry I **(4)**
- PHY 1510 - Introductory Physics I **(4)** and PHY 1100 - General Physics Lab I **(1)**
- PHY 1520 - Introductory Physics II **(4)** and PHY 1110 - General Physics Lab II **(1)**
- PHY 3170 - Modern Physics Laboratory **(2)**
- PHY 3510 - Intermediate Theoretical Physics **(4)**
- PHY 3610 - Mechanics I **(4)**
- PHY 3660 - Vibrations and Waves **(4)**
- PHY 3710 - Foundations of Modern Physics **(4)**
- **Approved Math/Science Electives from the list below: (4)**

Approved math/science Elective options:

- MTH 2775 - Linear Algebra (4)
- APM 2663 - Discrete Mathematics (4)

Engineering Core

- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- EGR 2500 - Introduction to Thermal Engineering (4)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)

Required professional subjects

- ECE 2005 - Electric Circuits (4)
- PHY 4995 - Independent Research (3 TO 6)

Professional Electives

Engineering Physics students must complete one of the two depth areas below for a minimum of 12 credits. For the depth areas, students must complete the two required courses and must select one course from the design electives. Students with different interests can construct different depth areas in consultation with the program coordinators, and via the SECS Petition of Exception process. Students must also complete 8 additional professional elective credits selected from the Technical Electives area. Courses taken as technical electives may not be used for credit in the technology depth area, design electives, or required professional subjects.

1. Solid state physics and technology depth area

Required courses:

- ECE 4130 - Microelectronic Materials and Devices (4)
- PHY 4720 - Quantum Mechanics I (4)

Choose one design elective course from the list below

- ECE 3105 - Electronic Circuits and Devices II (4)
- ECE 4135 - Microelectronic Fabrication Technologies (4)
- ECE 4210 - Communication Systems (4)
- ECE 4710 - Computer Hardware Design (4)

2. Applied mechanics depth area

Required courses:

- ME 3200 - Engineering Mechanics (4)
- ME 3250 - Mechanics of Materials (4)

Choose one design elective course from the list below

- ME 4500 - Energy Systems Analysis and Design **(4)**
- ME 4210 - Analysis and Design of Mechanical Structures **(4)**
- ME 4550 - Fluid and Thermal Systems Design **(4)**
- ME 4300 - Mechanical Systems Design **(4)**
- ME 4350 - Mechanical Computer-Aided Engineering **(4)**

3. Electromagnetism depth area

Required courses:

- PHY 3810 - Electricity and Magnetism **(4)**
- PHY 4820 - Electricity and Magnetism II **(4)**

Choose one design elective course from the list below

- ECE 4305 - Electromagnetics II **(4)**
- ECE 4310 - Antennas **(4)**
- ECE 4320 - Electromagnetic Compatibility **(4)**

4. Bioengineering/Biophysics depth area

Required courses:

- BE 3899 - Introduction to Engineering Biology **(4)**
- PHY 3250 - Biological Physics **(4)**

Choose one design elective course from the list below

- PHY 3260 - Medical Physics **(4)**
- BE 3150 - Bioinstrumentation **(4)**
- BE 4100 - Biomedical Signal Processing **(4)**
- BE 4300 - Bioprocess Engineering **(4)**
- BE 4110 - Medical Imaging **(4)**

5. Optics depth area

Required courses:

- PHY 3310 - Optics **(4)**
- ME 4750 - Optical Measurement and Quality Inspection **(4)**

Choose one design elective course from the list below:

- PHY 4310 - Lasers and Applications **(4)**

Technical electives, choose 8 credits from the list below

- APM 2663 - Discrete Mathematics (4)
 - ECE 2700 - Digital Logic Design (4)
 - ECE 3100 - Electronic Circuits and Devices I (4)
 - ECE 3105 - Electronic Circuits and Devices II (4)
 - ECE 3204 - Signals and Systems (4)
 - ECE 4130 - Microelectronic Materials and Devices (4)
 - ECE 4132 - VLSIC Design of Digital Chips (4)
 - ECE 4710 - Computer Hardware Design (4)
 - ME 3250 - Mechanics of Materials (4)
 - ME 3300 - Computer-Aided Design (3)
 - ME 3500 - Introduction to Fluid and Thermal Energy Transport (4)
 - ME 3700 - Properties of Materials (4)
 - MTH 2775 - Linear Algebra (4)
 - PHY 3180 - Nuclear Physics Laboratory (2)
 - PHY 3310 - Optics (4)
 - PHY 3720 - Nuclear Physics (4)
 - PHY 3810 - Electricity and Magnetism (4)
 - PHY 4180 - Modern Optics Laboratory (2)
 - PHY 4720 - Quantum Mechanics I (4)
 - PHY 4820 - Electricity and Magnetism II (4)
 - PHY 4870 - Electricity and Magnetism Laboratory (2)
- Any 4000-level ECE, ME or ISE courses (4-8)**

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science with a major in Engineering Physics, students must gain major standing in Engineering Physics. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Forms may be obtained from the SECS Undergraduate advising office or from the SECS website. At the time that major standing is approved, students with majors of Pre-Engineering Physics will have their major changed to Engineering Physics. Approval of both a major standing application and change of major to Engineering Physics is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Engineering Physics, students must meet the following requirements:

A) have an average GPA of 2.0 in the following mathematics and science courses: APM 2555, CHM 1440, MTH 1554, MTH 1555, PHY 1510, PHY 1100, PHY 1520 and PHY 1110.

B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600 and EGR 2800.

C) have no more than two grades below C in the required courses in A and B above.

D) have not attempted any course listed in A and B above more than three times.

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance Requirements and Additional General Education Notes

Satisfactory completion of the program requires an average grade of C within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and professional depth areas). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated and a total of three attempts are permitted. Students in this program are not required to complete the college distribution requirement of the College of Arts and Sciences.

Sample Engineering Physics schedule

Freshman Year

Fall Semester - 17 credits

- CHM 1440 - General Chemistry I (4)
- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- MTH 1554 - Calculus I (4)
- **General Education Course (4)**

Winter Semester - 17 credits

- MTH 1555 - Calculus II (4)
- PHY 1510 - Introductory Physics I (4)
- PHY 1100 - General Physics Lab I (1)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- **General Education Course (4)**

Sophomore year

Fall Semester - 17 credits

- MTH 2554 - Multivariable Calculus (4)
- PHY 1520 - Introductory Physics II (4)
- PHY 1110 - General Physics Lab II (1)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- **General Education Course (4)**

Winter Semester - 16 credits

- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4)
- ECE 2005 - Electric Circuits (4)
- EGR 2500 - Introduction to Thermal Engineering (4)
- **General Education Course (4)**

Junior year

Fall Semester - 14 credits

- EGR 2800 - Design and Analysis of Electromechanical Systems (4)
- PHY 3170 - Modern Physics Laboratory (2)
- PHY 3710 - Foundations of Modern Physics (4)
- **General Education Course (4)**

Winter Semester - 16 credits

- ECE 3100 - Electronic Circuits and Devices I (4)
- PHY 3310, PHY 3810, **or** PHY 4720 (4)
- **Professional Elective (4)**
- **General Education Course (4)**

Senior year

Fall Semester -- 16 credits

- PHY 3510 - Intermediate Theoretical Physics (4)
- PHY 3610 - Mechanics I (4)
- **Technical Elective (4)**
- **General Education (4)**

Winter Semester - 16 credits

- **Technical Elective (4)**
- **Professional Elective (4)**
- **Professional Elective (4)**
- PHY 4995 - Independent Research (4)

Information Technology, B.S.

Department Website

The program in Information Technology (IT) leading to a bachelor of science (BS) degree prepares students for a successful professional career in IT, and for graduate study in information technology. The program provides students with the technical foundation of information technology, problem solving skills, and hands-on practice. This will help students create and improve IT solutions by integrating existing and emerging technologies. This program prepares students for graduate studies and lifelong learning by providing them with the theoretical foundations of information technology and exposing them to areas of current and future practices. The pillars of IT include programming, networking, human-computer interaction, databases, information management, and web systems, built on a foundation of knowledge of the fundamentals of IT. The program also includes a strong professional component to develop skills in technical communication, ethics, and team work. The BS in Information Technology program is accredited by the Computing Accreditation Commission of ABET.

Program educational objectives

- In the course of their careers, graduates of the Information Technology program will:

- Work productively as problem solvers and providers of integrated IT solutions.
- Remain current in their profession through lifelong learning, including graduate school.
- Exhibit teamwork and leadership as well as exercise their profession with the highest level of ethics and social responsibility.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in information technology, B.S. program

To earn the Bachelor of Science degree with a major in information technology students must complete a minimum of 128 credits and meet the following requirements:

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below.

Foundations

- Writing Foundations (WRT 1060)
- Formal Reasoning (Satisfied by MTH 1554 or MTH 1222; see Mathematics and sciences)

Explorations: One course from each of the seven Explorations areas

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (Satisfied by approved science elective; see Mathematics and sciences)
- Social Science
- Western Civilization (Satisfied by PHL 1310); see Additional Major Requirements)

Integration

- Knowledge Applications (Satisfied by APM 1663; see Mathematics and sciences)

U.S. Diversity:

- May be met by an approved course in the Explorations area.

Writing Intensive and Capstone

- Capstone (Satisfied by CSI 4999; see Required professional subjects)
- Writing Intensive in the Major (Satisfied by CSI 4999; see Required professional subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements

All students must complete the following requirement.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering

Mathematics and sciences

- MTH 1554 - Calculus I **(4)** **or** MTH 1222 - Calculus for the Social Sciences **(4)**
- STA 2221 - Introduction to Statistical Methods **(4)**
- APM 1663 - Mathematics for Information Technology **(4)**
- **Approved science elective (4)***
***Approved science electives for information technology majors are:** BIO 1200, BIO 1300, CHM 1440 **and** CHM 1470, ENV 3080, PHY 1510 **and** PHY 1100.

Information technology core

- CSI 1210 - Problem Solving Using VBA and Excel **(4)**
- CSI 1320 - Introduction to Python Programming and Unix **(4)**
- CSI 2300 - Object-Oriented Computing **(4)**
- CSI 2440 - Computer Systems **(4)**
- CSI 2470 - Introduction to Computer Networks **(4)**
- CSI 2999 - Sophomore Project **(2)**

Required professional subjects

- CSI 3150 - Web and Mobile Systems **(4)**
- CSI 3210 - User Experience Design **(4)**
- CSI 3370 - Software Engineering and Practice **(4)**
- CSI 3450 - Database Design and Implementation **(4)**
- CSI 3480 - Security and Privacy in Computing **(4)**
- CSI 3620 - Data Structures and Algorithms **(4)**
- CSI 3660 - System Administration **(4)**
- CSI 4160 - Integrated Computing Systems **(4)**
- CSI 4430 - IT Project Management **(4)**

- CSI 4999 - Senior Capstone Project **(4)**

Professional track

Select two courses from one of the following professional tracks

System Administration Track

- CSI 3680 - Script Programming **(4)**
- CSI 4660 - Enterprise System Administration **(4)**

Bioinformatics Track

- BIO 3400 - Genetics **(4)**
- CSI 4780 - Bioinformatics **(4)**

Game Development Track

- CSI 3380 - Game Design **(4)**
- CSI 4380 - Game Programming **(4)**

Cybersecurity Track

- CSI 4460 - Information Security **(4)**
- CSI 4480 - Information Security Practices **(4)**
- CSI 4560 - Mobile Security **(4)**
- CSI 4600 - Network Security **(4)**
- CSI 4700 - Software Security **(4)**

Applications Development Track

- CSI 4230 - Mobile and Smart Phone Application Development **(4)**
- CSI 4510 - Advanced Web Design Application **(4)**

AI in Information Technology Track

- CSI 4100 - Ethics and Bias in AI **(4)**
- CSI 4150 - AI for IT Operations **(4)**

AI on Cloud Track

- CSI 4150 - AI for IT Operations **(4)**
- CSI 4240 - Cloud Computing **(4)**

Software Engineering Track

- CSI 4370 - Software Verification and Testing **(4)**
- CSI 4700 - Software Security **(4)**

Data Analysis Track

- CSI 3820 - Data Visualization **(3)**
- CSI 3860 - Contemporary Issues in Data Science **(3)**
- CSI 4820 - Big Data Analysis with Cloud Computing **(4)**

Students following older catalogs will be able to count courses under one of the tracks listed above to satisfy their professional track requirements.

Professional training

Take 2 credits from one of the following courses:

- CSI 4950 - Internship (2)
- CSI 4955 - Industrial Project (2)
- CSI 4995 - Undergraduate Research (2)

Communications

Choose one of the following courses:

- COM 2403 - Group Dynamics and Communication (4)
- COM 3300 - Communication, Culture, and Belonging (4)
- COM 3401 - Communication in Organizations (4)
- COM 3402 - Communication in Leadership (4)

Professional electives

Take 8 additional credits from the following courses:

Select CSI 2320, CSI 2330, CSI 2340, CSI 2350, CSI 2360, CSI 2810, or any 3000 or higher level CSI, BE, ECE, ISE, or ME designated courses. CSI 4950 cannot be used to fulfill the professional electives requirements. Courses at the 5000-level require approval of the instructor.

Students who have not taken CSI 1320 as part of the core requirement, for example due to transfers from another institution, can count CSI 2330 as part of the professional electives. They are encouraged to consider taking CSI 2330.

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science with a major in Information Technology, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Students can obtain the major standing form from the SECS Undergraduate Advising Website. At the time that major standing is approved, students with majors of Pre-Information Technology will have their major changed to Information Technology. Approval of both a major standing application and change of major to Information Technology is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing Information Technology, students must:

- A) have an average GPA of 2.0 in the following mathematics and science courses: Either MTH 1222 or MTH 1554, APM 1663 and approved science elective.
- B) have an average GPA of 2.0 in the following information technology core courses: CSI 1210, CSI 1320, CSI 2300, CSI 2440, CSI 2470 and CSI 2999.
- C) have no more than two grades below C in the courses listed in A and B above.
- D) have not attempted any course listed in A and B above more than three times.
- E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete requirements A and B above.

Students who have questions about petition of exception, transfer credit, academic standing, major standing, or any other aspects of their degree programs should consult an academic adviser and other relevant sections of the undergraduate catalog.

Performance requirements

Satisfactory completion of the program requires an average grade of at least 2.0 within each group: mathematics and sciences, information technology core, and professional courses (including required professional subjects, professional track, communications, and professional electives). Within the professional courses at most two different courses may be repeated, a total of three attempts per course is permitted, and at most two grades below C are permitted. A grade of C or better in CSI 4999 (Senior Capstone Project) must be received.

Sample information technology schedule

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year

Fall semester -- 16 credits

- CSI 1320 - Introduction to Python Programming and Unix **(4)**
- MTH 1222 - Calculus for the Social Sciences **(4)** or MTH 1554 - Calculus I **(4)**
- **General education (4)**
- **General education (4)**

Winter semester -- 16 credits

- CSI 1210 - Problem Solving Using VBA and Excel **(4)**
- CSI 2300 - Object-Oriented Computing **(4)**
- STA 2221 - Introduction to Statistical Methods **(4)**
- **General education (4)**

Sophomore year

Fall semester -- 16 credits

- APM 1663 - Mathematics for Information Technology **(4)**
- CSI 2470 - Introduction to Computer Networks **(4)**
- **General education (4)**
- **General education (4)**

Winter semester -- 18 credits

- CSI 2440 - Computer Systems **(4)**
- CSI 2999 - Sophomore Project **(2)**
- **Approved science elective (4)**

- **General education (4)**
- **General education (4)**

Junior year

Fall semester -- 16 credits

- CSI 3150 - Web and Mobile Systems **(4)**
- CSI 3210 - User Experience Design **(4)**
- CSI 3480 - Security and Privacy in Computing **(4)**
- **Communications (4)**

Winter semester -- 16 credits

- CSI 3370 - Software Engineering and Practice **(4)**
- CSI 3450 - Database Design and Implementation **(4)**
- CSI 3620 - Data Structures and Algorithms **(4)**
- **Professional track (4)**

Senior year

Fall semester -- 14 credits

- CSI 3660 - System Administration **(4)**
- **Professional training (2)**
- **Professional track (4)**
- **Professional elective (4)**

Winter semester -- 16 credits

- CSI 4160 - Integrated Computing Systems **(4)**
- CSI 4430 - IT Project Management **(4)**
- CSI 4999 - Senior Capstone Project **(4)**
- **Professional elective (4)**

Information Technology, B.S., Concentration in Cybersecurity

Department Website

The Department of Computer Science and Engineering offers an optional concentration in Cybersecurity to students interested in broadening their knowledge in this specific area of computing and wishing the area of concentration in their degree. The concentration is available to, but not required of, any student enrolled in the Bachelor of Science degree in Information Technology. The concentration will be noted on the transcript of the students. Students may earn only one concentration and the concentration must be completed as part of their degree.

Requirements for the major in Information Technology, B.S., Concentration in Cybersecurity

To earn a Bachelor of Science degree in Information Technology with a concentration in Cybersecurity, students must complete the following sequence of courses to satisfy their professional track and professional electives requirements of the Bachelor of Science degree in Information Technology. See Information Technology degree requirements for detail. Students who are interested in the concentration are advised to select Cybersecurity Track and to consult an academic adviser for guidance on course selection. Completing the concentration requires a minimum of 128 credits.

Primary Subjects

Select the following three courses

- CSI 4460 - Information Security (4)
- CSI 4480 - Information Security Practices (4)
- CSI 4700 - Software Security (4)

Additional Subjects

Select a course from the following

- CSI 3680 - Script Programming (4)
- CSI 4240 - Cloud Computing (4)
- CSI 4660 - Enterprise System Administration (4)

Note

Students can substitute one of the additional subjects with CSI 4900 (Special Topics), CSI 4995 (Undergraduate Research), or CSI 4996 (Independent Study) provided that the coursework is in the area of cybersecurity. Approvals of both the instructor and the chair of the Department of Computer Science and Engineering are required for such a substitution.

Information Technology, B.S., Specialization in System Administration

Department Website

The Department of Computer Science and Engineering offers an optional specialization in System Administration to students interested in broadening their knowledge in this specific area of information technology and wishing the area of specialization in their degree. The specialization is available to, but not required of, any student enrolled in the Bachelor of Science degree in Information Technology. The specialization will be noted on the transcript and diploma of the students.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Information Technology, B.S., Specialization in System Administration

To earn a Bachelor of Science degree in Information Technology with a specialization in System Administration, students must complete the following sequence of courses to satisfy their professional track and professional electives requirements of the Bachelor of Science degree in Information Technology. See Information Technology degree requirements for detail. Students who are interested in the specialization are advised to select System Administration Track and to consult an academic adviser for guidance on course selection. Completing the specialization requires a minimum of 128 credits. Students may earn only one specialization and the specialization must be completed as part of their degree.

Primary subjects

Take the following three courses

- CSI 3680 - Script Programming (4)
- CSI 4240 - Cloud Computing (4)
- CSI 4660 - Enterprise System Administration (4)

Additional subject

Select one course from the following

- CSI 4460 - Information Security (4)
- CSI 4480 - Information Security Practices (4)
- CSI 4700 - Software Security (4)

Note

Students can substitute one of the additional subjects with at least 3 credits of CSI 4900 (Special Topics), CSI 4995 (Undergraduate Research), or CSI 4996 (Independent Study) provided that the coursework is in the area of system administration. Approvals of both the instructor and the chair of the Department of Computer Science and Engineering are required for such a substitution.

Bachelor of Science in Engineering

Computer Engineering, B.S.E.

Department Website

Major technological advances are being made in the computer field at a rapid pace, and it is essential that computer engineering students are not only aware of these advances but prepared to work in this changing environment. Students should gain a strong background in the fundamentals of computer engineering and develop a willingness to accept and thrive on change.

The computer engineering program at Oakland University is designed to provide students with the basic knowledge and skills needed to function effectively in computer-related activities in the years ahead. It is unique in offering a focus on embedded systems. A balance between theoretical and practical experience and an emphasis on the software and hardware aspects of computers are key elements to the university's computer engineering major. The BSE in Computer Engineering program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Computer Engineering Program Criteria. To earn the degree of Bachelor of Science in Engineering with a major in computer engineering, students must complete a minimum of 129 credits and satisfy the writing requirements. They must meet the following requirements: (also see Undergraduate degree requirements)

Program educational objectives

The undergraduate program in Computer Engineering will provide educational experiences aimed toward producing graduates who will:

- Become successful practitioners in an engineering or related career.
- Pursue graduate study and/or continuing education opportunities in electrical engineering, computer engineering, or other related disciplines.
- Demonstrate leadership and excel in multi-disciplinary and multi-cultural environments.
- Function as responsible members of society with an awareness of the ethical and social ramifications of their work.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in computer engineering, B.S.E.

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below.

Foundations:

- Writing Foundations - WRT 1060
- Formal Reasoning (satisfied by MTH 1554; see Mathematics and sciences)

Explorations: One course from each of the seven

Explorations areas:

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (satisfied by EGR 2400 or EGR 2500; see engineering core)
- Social Science (satisfied by ECN 1500, ECN 2010, or ECN 2020; see Additional Major Requirements)
- Western Civilization (satisfied by PHL 1310; see Additional Major Requirements)

Integration:

- Knowledge Applications (satisfied by MTH 1555 for engineering majors; see Mathematics and sciences)
- Capstone (satisfied by ECE 4999; see Required Professional Subjects)

U.S. Diversity:

- May be met by an approved course in the Explorations area

Writing Intensive:

- Writing Intensive in the Major (satisfied by ECE 4999; see Required Professional Subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements

All students must meet the following requirements. Courses from these selections can meet general education exploration areas above.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering
- Economics: Choose one from ECN 1500, ECN 2010, or ECN 2020

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an SECS Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Mathematics and sciences

Students must complete at least 30 credits in the required math/science area. Students with fewer than 30 credit hours of math/science, for example due to transfers from another institution, must take additional courses to satisfy this requirement. Additional courses in math/science must be from the approved Math/Science Elective Options

- MTH 1554 - Calculus I **(4)**
- MTH 1555 - Calculus II **(4)**
- APM 2555 - Introduction to Differential Equations with Matrix Algebra **(4)**
- APM 2663 - Discrete Mathematics **(4)**
- CHM 1440 - General Chemistry I **(4)**
- PHY 1510 - Introductory Physics I **(4)**
- PHY 1520 - Introductory Physics II **(4)**
- **Approved Math/Science Elective from list below**

Approved Math/Science Elective Options:

Students interested in a double major in Electrical Engineering and Computer Engineering are encouraged to select MTH 2554. However, students who have an explicit interest in broadening their knowledge in another area of math or science should select an elective from the following approved course list:

- APM 3332 - Applied Matrix Theory **(4)**
- APM 3557 - Elements Partial Differential Equations **(4)**
- APM 4333 - Numerical Methods **(4)**

- APM 4334 - Applied Numerical Methods: Matrix Methods (4)
- APM 4663 - Applied Mathematics: Discrete Methods I (4)
- APM 4777 - Computer Algebra (4)
- BIO 1200 - Biology I (4)
- BIO 1300 - Biology II (4)
- BIO 2100 - Human Anatomy (4)
- BIO 2600 - Human Physiology (4)
- BIO 3220 - Neurobiology (4)
- BIO 3400 - Genetics (4)
- BIO 4412 - Functional Genomics and Bioinformatics (4)
- CHM 1450 - General Chemistry II (4) **and** CHM 1480 - General Chemistry Laboratory II (1)
- MOR 2442 - Elementary Models in Operations Research (4)
- MTH 2554 - Multivariable Calculus (4)
- MTH 2775 - Linear Algebra (4)
- MTH 3552 - Complex Variables (4)
- PHY 3250 - Biological Physics (4)
- PHY 3260 - Medical Physics (4)
- PHY 3310 - Optics (4)
- PHY 3660 - Vibrations and Waves (4)
- PHY 3710 - Foundations of Modern Physics (4)
- **Or others by approval by petition to the SECS Committee on Academic Standing.**

Engineering core

- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- EGR 2500 - Introduction to Thermal Engineering (4)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)

Required professional subjects

- CSI 2290 - Introduction to Data Structures in C (4)
- ECE 2005 - Electric Circuits (4)
- ECE 2700 - Digital Logic Design (4)
- ECE 3100 - Electronic Circuits and Devices I (4)
- ECE 3204 - Signals and Systems (4)
- ECE 3720 - Microprocessors (4)
- ECE 4710 - Computer Hardware Design (4)
- ECE 4721 - Embedded Systems Design (4)
- ECE 4999 - Senior Design (4)

Professional electives

Professional elective courses can be selected from 3000, 4000, or 5000 level ECE, CSI, or approved mathematics and science electives; provided that the prerequisites of the courses are met. Professional electives from other SECS programs can be selected

with prior approval of the Department of Electrical and Computer Engineering. Of the 12 professional elective credits, 4 credits must be selected from the Computers and Algorithms list, and at least 4 credits must be from a 4000 or 5000 level course. Professional electives at the 5000 level require an overall GPA of 3.0 or above. Prior approval of the chairperson of the Department of Electrical and Computer Engineering is required for ECE 4996 and ECE 4998. Co-ops/internships, ECE 3801, ECE 3802 and ECE 4731/5731 cannot be counted as professional electives in the Computer Engineering program.

Computers and Algorithms - choose at least one:

- CSI 3610 - Design and Analysis of Algorithms (4)
- CSI 3640 - Computer Organization (4)

Suggested electives:

High Performance Computing Area

- ECE 4772 - High Performance Embedded Programming (4)
- ECE 4810 - Quantum Computer Design (4)
- **ECE 5760 - Embedded System Design with FPGAs (4)**
- **ECE 5770 - GPU Accelerated Computing (4)**

Embedded AI Area

- ECE 4551 - Human Robot Interaction (4)
- ECE 4740 - Embedded Artificial Intelligence (AI) (4)
- CSI 4110 - Foundations of Edge AI (4)
- CSI 4130 - Artificial Intelligence (4)

Embedded Security Area

- ECE 4780 - Embedded Security (4)
- CSI 4790 - Automotive Security (4)
- CSI 4580 - AI for Cybersecurity and Privacy (4)

Microelectronics Area

- ECE 3105 - Electronic Circuits and Devices II (4)
- ECE 4130 - Microelectronic Materials and Devices (4)
- ECE 4132 - VLSIC Design of Digital Chips (4)
- ECE 4134 - Fundamentals of MEMS (4)

Mechatronics Area

- ECE 3600 - Electrical Machines (4)
- ECE 4400 - Automatic Control Systems (4)
- ECE 4415 - Microcomputer-based Control Systems (4)
- ECE 4520 - Automotive Mechatronics I (4)

Robotics Area

- ECE 4500 - Robotic Systems and Control (4)
- ECE 4510 - Machine Vision (4)
- ECE 4551 - Human Robot Interaction (4)

Major standing

To enroll in 3000- or higher-level courses and to become candidates for the degree of Bachelor of Science in Engineering with a major in Computer Engineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher-level courses. Students can obtain the major standing form from the SECS Undergraduate Advising website. At the time that major standing is approved, students with majors of Pre-Computer Engineering will have their major changed to Computer Engineering. Approval of both a major standing application and change of major to Computer Engineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Computer Engineering, students must:

- A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510, PHY 1520;
- B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800;
- C) have no more than two grades below C in the required courses listed in A and B above;
- D) have not attempted any course listed in A and B above more than three times; and
- E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and professional electives) and a grade of C or better in the senior design capstone course (ECE 4999). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three repeat attempts per course are permitted.

Sample computer engineering schedule

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year

Fall semester -- 17 credits

- CHM 1440 - General Chemistry I (4)

- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- MTH 1554 - Calculus I (4)
- **WRT or General Education (4)**

Winter semester -- 16 credits

- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- MTH 1555 - Calculus II (4)
- PHY 1510 - Introductory Physics I (4)
- **General Education (4)**

Sophomore year

Fall semester -- 16 credits

- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4)
- CSI 2290 - Introduction to Data Structures in C (4)
- EGR 2500 - Introduction to Thermal Engineering (4)
- PHY 1520 - Introductory Physics II (4)

Winter semester -- 16 credits

- ECE 2700 - Digital Logic Design (4)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)
- **General Education (4)**

Junior year

Fall semester -- 16 credits

- ECE 2005 - Electric Circuits (4)
- ECE 3720 - Microprocessors (4)
- ECE 4710 - Computer Hardware Design (4)
- **General Education (4)**

Winter semester -- 16 credits

- APM 2663 - Discrete Mathematics (4)
- ECE 3100 - Electronic Circuits and Devices I (4)
- ECE 4721 - Embedded Systems Design (4)
- **General Education (4)**

Senior year

Fall semester -- 16 credits

- CSI 3610 - Design and Analysis of Algorithms (4) or CSI 3640 - Computer Organization (4)
- ECE 3204 - Signals and Systems (4)
- **Professional elective (4)**
- **General Education (4)**

Winter semester -- 16 credits

- ECE 4999 - Senior Design (4)
- **Professional elective (4)**
- **General Education (4)**
- **Mathematics and Sciences elective (4)**

Electrical Engineering, B.S.E.

Department Website

Electrical engineering is a broad field encompassing a number of disciplines. Oakland University's undergraduate program in electrical engineering is designed to provide students with the basic knowledge and skills for challenging careers in electrical engineering in the coming decades. The curriculum offers strong fundamentals in analog and digital circuits, communications, computers, controls, electromagnetics, electronics including VLSI systems, electronic devices, and power systems. In addition, a strong laboratory component of the program offers numerous design opportunities and allows students to relate theoretical ideas to practical problems using modern equipment and hardware/software tools. The program also provides numerous engineering design experiences. Electrical and computer engineering faculty members are engaged in research related to new developments in the field. Their activities contribute to a well-developed, up-to-date curriculum. The BSE in Electrical Engineering program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Electrical Engineering Program Criteria. To earn the degree of Bachelor of Science in Engineering with a major in electrical engineering, students must complete a minimum of 129 credits, demonstrate writing proficiency (see Undergraduate degree requirements) and meet the following requirements:

Program educational objectives

The undergraduate program in Electrical Engineering will provide educational experiences aimed toward producing graduates who will:

- Become successful practitioners in an engineering or related career.
- Pursue graduate study and/or continuing education opportunities in electrical engineering, computer engineering, or other related disciplines.
- Demonstrate leadership and excel in multidisciplinary and multicultural environments.
- Function as responsible members of society with an awareness of the ethical and social ramifications of their work.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in electrical engineering, B.S.E. program

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below.

Foundations:

- Writing Foundations - WRT 1060
- Formal Reasoning (Satisfied by MTH 1554 for engineering majors; see Mathematics and sciences)

Explorations: One course from each of the seven

Explorations areas:

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (satisfied by EGR 2400 or EGR 2500; see engineering core)
- Social Science (satisfied by ECN 1500, ECN 2010, or ECN 2020; see Additional Major Requirements)
- Western Civilization (satisfied by PHL 1310; see Additional Major Requirements)

Integration:

- Knowledge Applications (satisfied by MTH 1555 for engineering majors; see Mathematics and sciences)
- Capstone (satisfied by ECE 4999; see Required Professional Subjects)

U.S. Diversity:

- May be met by an approved course in the Explorations area

Writing Intensive:

- Writing Intensive in the Major (satisfied by ECE 4999; see Required Professional Subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements:

All students must meet the following requirements. Courses from these selections can meet general education exploration areas above,

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering
- Economics: Choose one from ECN 1500, ECN 2010, or ECN 2020

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an SECS Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Mathematics and sciences

Students must complete at least 30 credits in the required math/science area. Students with fewer than 30 credit hours of math/science, for example due to transfers from another institution, must take additional courses to satisfy this requirement. Additional courses in math/science must be from the approved Math/Science Elective Options.

- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4)
- CHM 1440 - General Chemistry I (4)
- MTH 1554 - Calculus I (4)
- MTH 1555 - Calculus II (4)
- MTH 2554 - Multivariable Calculus (4)
- PHY 1510 - Introductory Physics I (4)
- PHY 1520 - Introductory Physics II (4)
- **Approved Math/Science Elective from list below**

Approved Math/Science Elective Options:

Students majoring in Electrical Engineering are advised to take MTH 2775 to broaden their knowledge of Linear Algebra. Students interested in a double major in Electrical Engineering and Computer Engineering are encouraged to select APM 2663. However, students who have an explicit interest in broadening their knowledge in another area of math or science should select an elective from the following approved course list:

- APM 2663 - Discrete Mathematics (4)
- APM 3332 - Applied Matrix Theory (4)
- APM 3557 - Elements Partial Differential Equations (4)
- APM 4333 - Numerical Methods (4)
- APM 4334 - Applied Numerical Methods: Matrix Methods (4)
- APM 4555 - Intermediate Ordinary Differential Equations (4)
- APM 4663 - Applied Mathematics: Discrete Methods I (4)
- APM 4777 - Computer Algebra (4)
- BIO 1200 - Biology I (4)
- BIO 1300 - Biology II (4)
- BIO 2100 - Human Anatomy (4)
- BIO 2600 - Human Physiology (4)
- BIO 3220 - Neurobiology (4)
- BIO 3400 - Genetics (4)
- BIO 4412 - Functional Genomics and Bioinformatics (4)
- CHM 1450 - General Chemistry II (4) and CHM 1480 - General Chemistry Laboratory II (1)
- MTH 3552 - Complex Variables (4)
- PHY 3250 - Biological Physics (4)
- PHY 3260 - Medical Physics (4)

- PHY 3310 - Optics (4)
- PHY 3610 - Mechanics I (4)
- PHY 3660 - Vibrations and Waves (4)
- PHY 3710 - Foundations of Modern Physics (4)
- PHY 4310 - Lasers and Applications (4)
- or others by approval by petition to the SECS Committee on Academic Standing.

Engineering core

- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- EGR 2500 - Introduction to Thermal Engineering (4)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)

Required professional subjects

- ECE 2005 - Electric Circuits (4)
- ECE 2700 - Digital Logic Design (4)
- ECE 3100 - Electronic Circuits and Devices I (4)
- ECE 3105 - Electronic Circuits and Devices II (4)
- ECE 3204 - Signals and Systems (4)
- ECE 3300 - Electromagnetics I (4)
- ECE 3600 - Electrical Machines (4)
- ECE 4999 - Senior Design (4)

Professional electives

Students must complete 16 credit hours of professional elective courses. To complete this requirement, students can either select a major-dependent concentration or select from the depth areas below. Students interested in selecting a concentration can find the requirements printed following the list of depth areas. Students preferring to select from the depth areas below are required to:

- complete two Key courses,
- one elective under one of the key courses,
- and one additional elective chosen from any 4000 level ECE course, except for ECE 4731/5731. Students with an overall GPA of 3.0 or greater may select one elective from ECE 5000 or SYS 5000 level courses. Prior approval of the chairperson of the Department of Electrical and Computer Engineering is required for ECE 4996 and ECE 4998.

The professional depth areas are:

1. Communications

Key course:

- ECE 4210 - Communication Systems (4)

Electives:

- ECE 4220 - Fundamentals of Digital Signal Processing (4)

- ECE 4230 - Satellite-based Positioning System **(4)**

2. Computer Engineering

Key course:

- ECE 3720 - Microprocessors **(4)**

Electives:

- ECE 4710 - Computer Hardware Design **(4)**
- ECE 4721 - Embedded Systems Design **(4)**
- ECE 4772 - High Performance Embedded Programming **(4)**
- ECE 4810 - Quantum Computer Design **(4)**

3. Control systems

Key course:

- ECE 4400 - Automatic Control Systems **(4)**

Electives:

- ECE 4410 - Digital Control Systems **(4)**
- ECE 4415 - Microcomputer-based Control Systems **(4)**

4. Electromagnetics

Key course:

- ECE 4305 - Electromagnetics II **(4)**

Electives:

- ECE 4310 - Antennas **(4)**
- ECE 4320 - Electromagnetic Compatibility **(4)**

5. Electronics

Key course:

- ECE 4130 - Microelectronic Materials and Devices **(4)**

Electives:

- ECE 4132 - VLSIC Design of Digital Chips **(4)**
- ECE 4134 - Fundamentals of MEMS **(4)**
- ECE 4135 - Microelectronic Fabrication Technologies **(4)**

6. Robotics

Key course:

- ECE 4500 - Robotic Systems and Control **(4)**

Electives:

- ECE 4510 - Machine Vision **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**
- ECE 4551 - Human Robot Interaction **(4)**

7. Power systems

Key course:

- ECE 4610 - Introduction to Power Electronics **(4)**

Electives:

- ECE 4620 - Electrical Energy Systems **(4)**
- ECE 4625 - Microgrid Design and Operation **(4)**
- ECE 4630 - Electric and Hybrid Drive Systems **(4)**

8. Bioinstrumentation and Biosignal Processing

Key course:

- BE 3150 - Bioinstrumentation **(4)**

Electives:

- BE 4100 - Biomedical Signal Processing **(4)**
- BE 4110 - Medical Imaging **(4)**
- BE 4120 - Medical Image Analysis **(4)**
- ECE 4134 - Fundamentals of MEMS **(4)**

Optional Concentrations:

The Electrical and Computer Engineering Department offers optional concentrations in Automotive Electrification, Mechatronics, Microelectronics, Robotics, Power and Energy Systems, and to students interested in broadening their knowledge in a specific area of electrical engineering and wishing an area of concentration in their degree. These concentrations are only applicable for any student enrolled in the Bachelor of Science degree in Electrical Engineering. The sequences of courses listed below for each concentration are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Electrical Engineering with a concentration may require more than 129 credits. Students may earn only one concentration and the concentration must be completed as part of their degree. At least 50% of the major with concentration requirements must be earned at Oakland University. The concentration will be noted on the students' transcript.

1. Automotive Electrification Concentration

The Automotive Electrification Concentration includes courses related to battery management, electric drive, and system integration as they relate to automotive electrification. Complete four courses from those listed below. At least three courses must be selected from the Fundamental Courses list. The fourth course can be selected from either the Fundamental or Elective Courses.

Fundamental Courses (select at least 3 courses)

- ECE 4600 - Fundamentals of AC Motor Design **(4)**

- ECE 4610 - Introduction to Power Electronics **(4)**
- ECE 4630 - Electric and Hybrid Drive Systems **(4)**
- ECE 4640 - Battery Management Systems **(4)**

Elective Courses

- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**
- ME 4535 - Introduction to Electric Drive Vehicle Engineering **(4)**
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles **(4)**

2. Mechatronics Concentration

The Mechatronics Concentration includes courses related to automotive mechatronics, vehicle dynamics, as well as systems integration as they relate to modeling and control of mechatronic systems.

Required Course

- ECE 4520 - Automotive Mechatronics I **(4)**

Fundamental Courses (Choose two courses)

- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4721 - Embedded Systems Design **(4)**
- ME 4220 - Vehicle Dynamics **(4)**

Elective Courses (Choose one course)

- ECE 3720 - Microprocessors **(4)**
- ECE 4134 - Fundamentals of MEMS **(4)**
- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4510 - Machine Vision **(4)**

3. Microelectronics Concentration

The Microelectronic Concentration includes courses related to semiconductor materials and devices, micro and nanofabrication technologies, and chip level integration of multiple systems.

Required Courses

- ECE 4130 - Microelectronic Materials and Devices **(4)**
- ECE 4132 - VLSIC Design of Digital Chips **(4)**
- ECE 4135 - Microelectronic Fabrication Technologies **(4)**

Choose one additional course from the list below

- ECE 4134 - Fundamentals of MEMS **(4)**

- ECE 4710 - Computer Hardware Design **(4)**

4. Robotics Concentration

The Robotics Concentration includes courses related to AI, computing, sensing, planning, and actuation for robotics systems as well as the integration of these components into a holistic robotics system to be utilized in real-world applications.

Complete four courses from those listed below. At least two courses must be selected from the Fundamental Courses list. The remaining two courses can be selected from the Fundamental and/or the Elective courses lists.

Fundamental Courses (choose at least 2 courses)

- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4500 - Robotic Systems and Control **(4)**
- ECE 4510 - Machine Vision **(4)**

Elective Courses

- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**
- ECE 4551 - Human Robot Interaction **(4)**
- ECE 4740 - Embedded Artificial Intelligence (AI) **(4)**
- CSI 4130 - Artificial Intelligence **(4)**

5. Power and Energy Systems Concentration

The Power and Energy Systems Concentration includes courses related to power systems, power electronics, microgrids, and other courses related to power/energy.

Required Courses

- ECE 4610 - Introduction to Power Electronics **(4)**
- ECE 4620 - Electrical Energy Systems **(4)**
- ECE 4625 - Microgrid Design and Operation **(4)**

Choose one additional course from the list below

- ECE 4630 - Electric and Hybrid Drive Systems **(4)**
- ECE 4640 - Battery Management Systems **(4)**
- ME 4530 - Renewable Energy **(4)**

Major standing

To enroll in 3000- or higher-level courses and to become candidates for the degree of Bachelor of Science with a major in Electrical Engineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher-level courses. Forms may be obtained from the SECS Undergraduate Advising Office or from the SECS website. At the time that major standing is approved, students with majors of Pre-Electrical Engineering will have their major changed to Electrical Engineering. Approval of both a major standing application and change of major to Electrical Engineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Electrical Engineering, students must:

- A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510, PHY 1520
- B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800;
- C) have no more than two grades below C in the required courses listed in A and B above;
- D) have not attempted any course listed in A and B above more than three times; and
- E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and professional electives) and a grade of C or better in the senior design capstone course (ECE 4999). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three attempts per course are permitted.

Sample electrical engineering program schedule

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year

Fall semester -- 17 credits

- CHM 1440 - General Chemistry I **(4)**
- EGR 1200 - Engineering Graphics and CAD **(1)**
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science **(4)**
- MTH 1554 - Calculus I **(4)**
- **WRT or General Education (4)**

Winter semester -- 16 credits

- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)**
- MTH 1555 - Calculus II **(4)**
- PHY 1510 - Introductory Physics I **(4)**
- **General Education (4)**

Sophomore year

Fall semester -- 16 credits

- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4)
- ECE 2005 - Electric Circuits (4)
- PHY 1520 - Introductory Physics II (4)
- **General Education (4)**

Winter semester -- 16 credits

- EGR 2500 - Introduction to Thermal Engineering (4)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)
- **General Education (4)**

Junior year

Fall semester -- 16 credits

- ECE 3100 - Electronic Circuits and Devices I (4)
- ECE 3204 - Signals and Systems (4)
- MTH 2554 - Multivariable Calculus (4)
- **General Education (4)**

Winter semester -- 16 credits

- ECE 2700 - Digital Logic Design (4)
- ECE 3105 - Electronic Circuits and Devices II (4)
- ECE 3300 - Electromagnetics I (4)
- ECE 3600 - Electrical Machines (4)

Senior year

Fall semester -- 16 credits

- **Key course-area 1 (4) or Optional Concentration course 1 (4)**
- **Key course-area 2 (4) or Optional Concentration course 2 (4)**
- **Mathematics and Sciences elective (4)**
- **General Education (4)**

Winter semester -- 16 credits

- **Elective-area 1 or Optional Concentration course 3 (4)**
- **ECE Elective or Optional Concentration course 4 (4)**
- **ECE 4999 - Senior Design (4)**
- **General education (4)**

Electrical Engineering, B.S.E., Concentration in Automotive Electrification

Department Website

The Electrical and Computer Engineering Department offers optional concentrations in Automotive Electrification, Mechatronics, Microelectronics, Power and Energy Systems, and Robotics to students interested in broadening their knowledge in a specific area of electrical engineering and wishing an area of concentration in their degree. These concentrations are only applicable for any student enrolled in the Bachelor of Science degree in Electrical Engineering. The sequences of courses listed below for each concentration are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Electrical Engineering with concentration may require more than 129 credits. Students may earn only one concentration, the concentration must be completed as part of their degree, and at least 50% of the major with concentration requirements must be earned at Oakland University. The concentration will be noted on the students' transcript.

See Electrical Engineering, B.S.E. and adviser for complete details on concentration.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Electrical Engineering, B.S.E, Concentration in Automotive Electrification

The Automotive Electrification Concentration includes courses related to battery management, electric drive, and system integration as they relate to automotive electrification.

Complete four courses from those listed below. At least three courses must be selected from the Fundamental Courses list. The fourth course can be selected from either the Fundamental or Elective Courses.

Fundamental Courses (select at least 3 courses)

- ECE 4600 - Fundamentals of AC Motor Design **(4)**
- ECE 4610 - Introduction to Power Electronics **(4)**
- ECE 4630 - Electric and Hybrid Drive Systems **(4)**
- ECE 4640 - Battery Management Systems **(4)**

Elective Courses

- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**
- ME 4535 - Introduction to Electric Drive Vehicle Engineering **(4)**
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles **(4)**

Major Standing

To gain major standing in Electrical Engineering, students must:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510 and PHY 1520;

B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800;

C) have no more than two grades below C in the required courses in A and B above;

D) have not attempted any course listed in A and B above more than three times; and

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Performance requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and concentration/elective) and a grade of C or better in the senior design capstone course (ECE 4999). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three attempts per course are permitted.

Electrical Engineering, B.S.E., Concentration in Mechatronics

Department Website

The Electrical and Computer Engineering Department offers optional concentrations in Automotive Electrification, Mechatronics, Microelectronics, Power and Energy Systems, and Robotics to students interested in broadening their knowledge in a specific area of electrical engineering and wishing an area of concentration in their degree. These concentrations are only applicable for any student enrolled in the Bachelor of Science degree in Electrical Engineering. The sequences of courses listed below for each concentration are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Electrical Engineering with concentration may require more than 129 credits. Students may earn only one concentration, the concentration must be completed as part of their degree, and at least 50% of the major with concentration requirements must be earned at Oakland University. The concentration will be noted on the students' transcript.

See Electrical Engineering, B.S.E. and adviser for complete details on concentration.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Electrical Engineering, B.S.E., Concentration in Mechatronics

The Mechatronics Concentration includes courses related to automotive mechatronics, vehicle dynamics, as well as systems integration as they relate to modeling and control of mechatronic systems.

Required Course

- ECE 4520 - Automotive Mechatronics I **(4)**

Fundamental Courses (Choose two courses)

- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4721 - Embedded Systems Design **(4)**
- ME 4220 - Vehicle Dynamics **(4)**

Elective Courses (Choose one course)

- ECE 3720 - Microprocessors **(4)**
- ECE 4134 - Fundamentals of MEMS **(4)**
- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4510 - Machine Vision **(4)**

Major Standing

To gain major standing in Electrical Engineering, students must:

- A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510 and PHY 1520;
- B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800;
- C) have no more than two grades below C in the required courses in A and B above;
- D) have not attempted any course listed in A and B above more than three times; and
- E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Performance Requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and concentration/elective) and a grade of C or better in the senior design capstone course (ECE 4999). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three attempts per course are permitted.

Electrical Engineering, B.S.E., Concentration in Microelectronics

Department Website

The Electrical and Computer Engineering Department offers optional concentrations in Automotive Electrification, Mechatronics, Microelectronics, Power and Energy Systems, and Robotics to students interested in broadening their knowledge in a specific area of electrical engineering and wishing an area of concentration in their degree. These concentrations are only applicable for any student enrolled in the Bachelor of Science degree in Electrical Engineering. The sequences of courses listed below for each concentration are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Electrical Engineering with concentration may require more than 129 credits. Students may earn only one concentration, the concentration must be completed as part of their degree, and at least 50% of the major with concentration requirements must be earned at Oakland University. The concentration will be noted on the students' transcript.

See Electrical Engineering, B.S.E. and adviser for complete details on concentration.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Electrical Engineering, B.S.E., Concentration in Microelectronics

The Microelectronic Concentration includes courses related to semiconductor materials and devices, micro and nanofabrication technologies, and chip level integration of multiple systems.

Required Courses

- ECE 4130 - Microelectronic Materials and Devices **(4)**
- ECE 4132 - VLSIC Design of Digital Chips **(4)**
- ECE 4135 - Microelectronic Fabrication Technologies **(4)**

Choose one additional course from the list below:

- ECE 4134 - Fundamentals of MEMS **(4)**
- ECE 4710 - Computer Hardware Design **(4)**

Major Standing

To gain major standing in Electrical Engineering, students must:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510 and PHY 1520;

B) have an average GPA of 2.0 in engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800;

C) have no more than two grades below C in the required courses listed in A and B above;

D) have not attempted any course listed in A and B above more than three times; and

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Performance Requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and concentration/elective) and a grade of C or better in the senior design capstone course (ECE 4999). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three attempts per course are permitted.

Electrical Engineering, B.S.E., Concentration in Power and Energy Systems

Department Website

The Electrical and Computer Engineering Department offers optional concentrations in Automotive Electrification, Mechatronics, Microelectronics, Power and Energy Systems, and Robotics to students interested in broadening their knowledge in a specific area of electrical engineering and wishing an area of concentration in their degree. These concentrations are only applicable for any student enrolled in the Bachelor of Science degree in Electrical Engineering. The sequences of courses listed below for each concentration are taken to satisfy the professional electives requirement. Note that completing the Bachelor of

Science degree in Electrical Engineering with concentration may require more than 129 credits. Students may earn only one concentration, the concentration must be completed as part of their degree, and at least 50% of the major with concentration requirements must be earned at Oakland University. The concentration will be noted on the students' transcript.

See Electrical Engineering, B.S.E. and adviser for complete details on concentration.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements of the major in Electrical Engineering, B.S.E., Concentration in Power and Energy Systems

The Power and Energy Systems Concentration includes courses related to power systems, power electronics, microgrids, and other courses related to power/energy.

Required Courses

- ECE 4610 - Introduction to Power Electronics (4)
- ECE 4620 - Electrical Energy Systems (4)
- ECE 4625 - Microgrid Design and Operation (4)

Choose one additional course from the list below

- ECE 4630 - Electric and Hybrid Drive Systems (4)
- ECE 4640 - Battery Management Systems (4)
- ME 4530 - Renewable Energy (4)

Major Standing

To gain major standing in Electrical Engineering, students must:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510 and PHY 1520;

B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800;

C) have no more than two grades below C in the required courses in A and B above;

D) have not attempted any course listed in A and B above more than three times; and

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Performance Requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and concentration/elective) and a grade of C

or better in the senior design capstone course (ECE 4999). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three attempts per course are permitted.

Electrical Engineering, B.S.E., Concentration in Robotics

Department Website

The Electrical and Computer Engineering Department offers optional concentrations in Automotive Electrification, Mechatronics, Microelectronics, Power and Energy Systems, and Robotics to students interested in broadening their knowledge in a specific area of electrical engineering and wishing an area of concentration in their degree. These concentrations are only applicable for any student enrolled in the Bachelor of Science degree in Electrical Engineering. The sequences of courses listed below for each concentration are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Electrical Engineering with concentration may require more than 129 credits. Students may earn only one concentration, the concentration must be completed as part of their degree, and at least 50% of the major with concentration requirements must be earned at Oakland University. The concentration will be noted on the students' transcript.

See Electrical Engineering, B.S.E. and adviser for complete details on concentration.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Electrical Engineering, B.S.E, Concentration in Robotics

The Robotics Concentration includes courses related to AI, computing, sensing, planning, and actuation for robotics systems as well as the integration of these components into a holistic robotics system to be utilized in real-world applications.

Complete four courses from those listed below. At least two courses must be selected from the Fundamental Courses list. The remaining two courses can be selected from the Fundamental and/or the Elective courses lists.

Fundamental Courses (choose at least 2 courses)

- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4500 - Robotic Systems and Control **(4)**
- ECE 4510 - Machine Vision **(4)**

Elective Courses

- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**
- ECE 4551 - Human Robot Interaction **(4)**
- ECE 4740 - Embedded Artificial Intelligence (AI) **(4)**
- CSI 4130 - Artificial Intelligence **(4)**

Major Standing

To gain major standing in Electrical Engineering, students must:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510 and PHY 1520;

B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800;

C) have no more than two grades below C in the required courses in A and B above;

D) have not attempted any course listed in A and B above more than three times; and

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Performance Requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and concentration/elective) and a grade of C or better in the senior design capstone course (ECE 4999). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three attempts per course are permitted.

Industrial and Systems Engineering, B.S.E.

Department Website

The profession of Industrial and Systems Engineering offers the widest range of choices in technical areas and career options. Other engineering disciplines apply skills to very specific areas. Industrial and Systems Engineering gives you the opportunity to work in a variety of businesses. Whether it is distributing products worldwide, manufacturing superior automobiles, or streamlining the procedures in an operating room, all of these situations share the common goal of increasing efficiencies and saving companies money. The most distinctive aspect of Industrial and Systems Engineering is the career and job flexibility it offers and the faster pathway to leadership positions it provides. Industrial and Systems Engineers work in various industries including automotive, energy, healthcare, advanced and digital manufacturing, defense, logistics, service, aerospace, entertainment and others. The BSE in Industrial and Systems Engineering program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the both Industrial Engineering and in Systems Engineering Program Criteria.

In order to earn the degree of Bachelor of Science in Engineering with a major in industrial and systems engineering, students must complete a minimum of 128 credits and meet the following requirements:

Program educational objectives

The educational objectives of the Industrial and Systems Engineering B.S.E. program are to produce graduates who will:

- design, develop, implement, sustain and improve systems which integrate people, materials, equipment, information and energy;
- operate effectively in dynamic and diverse organizations;
- demonstrate a professional attitude, integrity and commitment to life-long learning in their work.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in industrial and systems engineering, B.S.E. program

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below:

Foundations:

- Writing Foundations - WRT 1060
- Formal Reasoning - (Satisfied by MTH 1554; see Mathematics and Sciences)

Explorations: One course from each of the seven Explorations areas

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology - (Satisfied by EGR 2400 or EGR 2500; see Engineering Core)
- Social Science - (Satisfied by ECN 1500, ECN 2010, or ECN 2020; see Major corequisites. Additional Major Requirements)
- Western Civilization - (Satisfied by PHL 1310 - Introduction to Ethics in Science and Engineering; see Additional Major Requirements. However, if an ISE major takes ISE 4421 - Leadership Principles and Positive Engagement, then they may take any Western Civilization course); see Major corequisites.

Integration:

- Knowledge Applications -Satisfied by MTH 1555; see Mathematics and sciences
- Capstone (Satisfied by ISE 4491; see Required professional courses)

U.S. Diversity:

- May be met by an approved course in the Explorations area.

Writing Intensive and Capstone:

- Capstone (Satisfied by ISE 4491; see Required professional courses)
- Writing Intensive in the Major (Satisfied by ISE 4491; see Required professional subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

* In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with a SECS Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Additional Major Requirements

All students must meet the following requirements. Some courses from these selections also satisfy general education exploration areas above.

- Professional Ethics: Choose one from PHL 1310 - Introduction to Ethics in Science and Engineering or ISE 4421 - Leadership Principles and Positive Engagement
- Economics: Choose one from ECN 1500, ECN 2010 or ECN 2020

Mathematics and Sciences

- MTH 1554 - Calculus I (4)
- MTH 1555 - Calculus II (4)
- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4) (or [APM 2559 (4) and MTH 2775 (4)])
- APM 2663 - Discrete Mathematics (4) or MTH 2554 - Multivariable Calculus (4)
- CHM 1440 - General Chemistry I (4)
- PHY 1510 - Introductory Physics I (4)
- PHY 1520 - Introductory Physics II (4)

Approved Math/Science Elective Options

Students who complete APM 2559 and MTH 2775 instead of APM 2555 above are not permitted to use MTH 2775 toward the elective requirement. It is recommended that students discuss their educational and career interests with an ISE Dept. faculty member or a SECS Undergraduate Academic Adviser prior to selecting this course:

- APM 2663 - Discrete Mathematics (4)
- APM 3332 - Applied Matrix Theory (4)
- APM 3557 - Elements Partial Differential Equations (4)
- APM 4333 - Numerical Methods (4)
- APM 4334 - Applied Numerical Methods: Matrix Methods (4)
- APM 4663 - Applied Mathematics: Discrete Methods I (4)
- APM 4777 - Computer Algebra (4)
- BIO 1200 - Biology I (4)
- BIO 1300 - Biology II (4)
- BIO 2100 - Human Anatomy (4)
- BIO 2600 - Human Physiology (4)
- BIO 3400 - Genetics (4)
- MTH 2554 - Multivariable Calculus (4)
- MTH 2775 - Linear Algebra (4)
- MTH 3552 - Complex Variables (4)
- PHY 3250 - Biological Physics (4)
- PHY 3260 - Medical Physics (4)
- STA 4002 - Applied Linear Models I (4)

- **Other math or science course with approval by written petition to the SECS Committee on Academic Standing. Please contact a SECS Undergraduate Academic Adviser for more information.**

Students must complete at least 30 credits in the required math/science area. Students with fewer than 30 credit hours of math/science, for example due to transfers from another institution, must take additional courses to satisfy this requirement. Additional courses in math/science must be from the approved departmental list or by petition of exception.

Engineering core subjects

- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- EGR 2500 - Introduction to Thermal Engineering (4)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)

Required professional subjects

- ISE 3318 - Engineering Statistics and Economic Analysis (4)
- ISE 3330 - Engineering Operations Research (3)
- ISE 3341 - Ergonomics and Work Design (4)
- ISE 4469 - Computer Simulation of Discrete Event Systems (4)
- ISE 4483 - Production Systems and Workflow Analysis (4)
- ISE 4484 - Flexible and Lean Manufacturing Systems (4)
- ISE 4485 - Statistical Quality Analysis (4)
- ISE 4487 - Foundations of Systems Engineering (4)
- ISE 4491 - Senior Design (4)

Professional electives

Students must complete 12 credits of professional electives. At least 8 of the 12 credits must be from Group A. The remaining 4 credits can be from Group A or Group B.

Group A

- ISE 4410 - Supply Chain Modeling and Analysis (4)
- ISE 4421 - Leadership Principles and Positive Engagement (4)
- ISE 4422 - Robotic Systems (4)
- ISE 4423 - Industrial Automation Systems (4)
- ISE 4431 - Engineering Operations Research - Stochastic Models (4)
- ISE 4434 - Metamodeling and Optimization Methods in Design (4)
- ISE 4435 - Data Analytics (4)
- ISE 4441 - Human Factors Engineering (4)
- ISE 4442 - Virtual and Augmented Reality (4)
- ISE 4443 - Automotive User Experience (4)
- ISE 4450 - Fundamentals of Energy Management (4)
- ISE 4455 - Foundations of Safety Engineering (4)

- ISE 4456 - Engineering Risk Analysis (4)
- ISE 4461 - PLM Applications - Product Data Management (2)
- ISE 4462 - PLM Applications- Robotic Systems (2)
- ISE 4463 - PLM Applications - Ergonomics (2)
- ISE 4464 - Design for Manufacturing and Assembly Analysis (4)
- ISE 4466 - PLM Applications - Change Management (2)
- ISE 4467 - PLM Applications - Throughput Simulation (2)
- **ISE 4471 - Collaborative Robots and Flexible Automation (4)**
- **ISE 4472 - Digital Twins in Smart Manufacturing (4)**
- **ISE 4473 - Mixed Reality Applications in Manufacturing (4)**
- ISE 4480 - E-Commerce and ERP (4)
- ISE 4482 - Engineering Processes Decisions Using ERP (4)
- ISE 4488 - Advanced Systems Engineering (4)
- **ISE 4490 - Industrial Sustainability (4)**
- ISE 4512 - Artificial Intelligence in Manufacturing (4)
- ISE 4900 - Special Topics (2 TO 4)

Group B

- ISE 4996 - Independent Study (2 TO 4) *
- ISE 4998 - Senior Project (2 TO 4) *
- ME 3700 - Properties of Materials (4)
- HRD 4600 - Lean Kaizen in Organizations (4)

** This course cannot be taken without prior written permission from the Chairperson of the Industrial and Systems Engineering Department.*

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science in Engineering with a major in Industrial and Systems Engineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Forms may be obtained from the SECS Undergraduate advising office or from the SECS website. At the time that major standing is approved, students with majors of Pre-Industrial and Systems Engineering will have their major changed to Industrial and Systems Engineering. Approval of both a major standing application and change of major to Industrial and Systems Engineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Industrial and Systems Engineering, students must:

- have an average GPA of at least 2.0 in the following mathematics and sciences courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510, PHY 1520.
- have an average GPA of at least 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800.
- have no more than two grades below C in the courses listed in A and B above;
- have not attempted any course listed in A and B above more than three times.
- have not repeated more than three different courses listed in A and B above. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted for the semester in which the student will complete the courses listed in A and B above.

Performance requirements

Satisfactory completion of the program requires a grade-point average of at least a 2.0 within each of the following groups of courses: mathematics and sciences courses; engineering core courses; and professional courses (all required professional subjects and professional electives) and a grade of C or better in the senior design capstone course (ISE 4991).

Within the professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three attempts per course is permitted.

General business minor

Students may wish to augment their degree with a minor in general business. This may be done by completing 19-23 credits specified by the School of Business Administration (see *Minors* section in School of Business Administration portion of this catalog). Credits from the minor may be used to satisfy the social science general education requirement and the economics requirement.

Sample industrial and systems engineering schedule

Industrial and systems engineering students with the required background may follow a schedule such as the one below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program. All students should contact the SECS Undergraduate Advising Office before completing their schedule.

Freshman year

Fall semester - 16 credits

- EGR 1400 - Computer Problem Solving in Engineering and Computer Science **(4)**
- MTH 1554 - Calculus I **(4)**
- CHM 1440 - General Chemistry I (4)
- General education course (4)

Winter semester - 17 credits

- EGR 1200 - Engineering Graphics and CAD **(1)**
- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)**
- MTH 1555 - Calculus II **(4)**
- PHY 1510 - Introductory Physics I **(4)**
- General education course (4)

Sophomore year

Fall semester - 16 credits

- APM 2555 - Introduction to Differential Equations with Matrix Algebra **(4)**
- EGR 2600 - Introduction to Industrial and Systems Engineering **(4)**
- PHY 1520 - Introductory Physics II **(4)**
- **General education course (4)**

Winter semester - 16 credits

- EGR 2500 - Introduction to Thermal Engineering **(4)**
- EGR 2800 - Design and Analysis of Electromechanical Systems **(4)**
- APM 2663 - Discrete Mathematics **(4)** or MTH 2554 - Multivariable Calculus **(4)**
- **General education course (4)**

Junior year

Fall semester - 16 credits

- ISE 3318 - Engineering Statistics and Economic Analysis **(4)**
- ISE 3341 - Ergonomics and Work Design **(4)**
- **General education course (4)**
- **Math or science elective course (4)**

Winter semester - 15 credits

- ISE 3330 - Engineering Operations Research **(3)**
- ISE 4469 - Computer Simulation of Discrete Event Systems **(4)**
- ISE 4484 - Flexible and Lean Manufacturing Systems **(4)**
- **General education course (4)**

Senior year

Fall semester - 16 credits

- ISE 4483 - Production Systems and Workflow Analysis **(4)**
- Professional elective course(s) (one 4 credits or two 2 credits)
- Professional elective course(s) (one 4 credits or two 2 credits)
- General education course (4)

Winter semester - 16 credits

- ISE 4485 - Statistical Quality Analysis **(4)**
- ISE 4487 - Foundations of Systems Engineering **(4)**
- ISE 4491 - Senior Design **(4)**
- Professional elective course(s) (one 4 credits or two 2 credits)

Mechanical Engineering, B.S.E.

Department Website

The field of mechanical engineering offers career opportunities in areas such as design, analysis, test development, research and the manufacturing of various products. Oakland University's mechanical engineering program provides students with a foundation in the fundamental concepts and principles associated with mechanics of solids, thermodynamics, fluid and thermal energy, materials, manufacturing, design of mechanical systems, electrical circuits, computer programming and software utilization. A strong laboratory experience and the utilization of instrumentation and computer simulation tools are interwoven through the curriculum. The program also provides numerous engineering design experiences. The BSE in Mechanical Engineering program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Mechanical Engineering Program Criteria. In order to earn the degree of Bachelor of Science in Engineering with a major in mechanical engineering, students must complete a minimum of 128 credits and meet the following requirements:

Program educational objectives

- The objectives of the Mechanical Engineering program are to produce graduates, who three to five years after graduation, will:
- function successfully in engineering roles within the automotive and other global industries,
- engage in lifelong learning and pursue graduate study in mechanical engineering or other post-graduate education,
- contribute effectively and ethically to a modern, multidisciplinary workplace, and
- demonstrate effective communication, problem-solving and teamwork skills.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in mechanical engineering, B.S.E.

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from the courses listed below:

Foundations:

- Writing Foundations - WRT 1060
- Formal Reasoning (satisfied by MTH 1554; see Mathematics and Sciences)

Explorations: One course from each of the seven

Explorations areas:

- Arts
- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (satisfied by EGR 2400 or EGR 2500; see Engineering Core)
- Social Science (satisfied by ECN 1500, ECN 2010 or ECN 2020; see Additional Major Requirements)
- Western Civilization (satisfied by PHL 1310; see Additional Major Requirements)

Integration:

- Knowledge Applications (satisfied by MTH 1555; see Mathematics and Sciences)
- Capstone (satisfied by ME 4999; see Required Professional Subjects)

U.S. Diversity:

- May be met by an approved course in the Explorations area

Writing Intensive:

- Writing Intensive in the Major (satisfied by ME 4999; see Required Professional Subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements:

All mechanical engineering students must meet the following requirements. Courses from these selections can meet general education exploration areas above.

- Professional Ethics: PHL 1310 - Introduction to Ethics in Science and Engineering
- Economics: Choose one from ECN 1500, ECN 2010 or ECN 2020

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an SECS Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Mathematics and Sciences

Students must complete at least 30 credits in the required math/science area. Students with fewer than 30 credit hours of math/science, for example due to transfers from another institution, must take additional courses to satisfy this requirement. Additional courses in math/science must be from the approved departmental list or by petition of exception.

- APM 2555 - Introduction to Differential Equations with Matrix Algebra (4)
- CHM 1440 - General Chemistry I (4)
- MTH 1554 - Calculus I (4)
- MTH 1555 - Calculus II (4)
- MTH 2554 - Multivariable Calculus (4)
- PHY 1510 - Introductory Physics I (4)
- PHY 1520 - Introductory Physics II (4)

Approved Math/Science Elective Options

Students majoring in mechanical engineering are advised to take MTH 2775 to broaden their knowledge of linear algebra. However, students who have an explicit interest in broadening their knowledge in a specific area of math or science should select an elective from the following approved course list:

- APM 3332 - Applied Matrix Theory (4)
- APM 3557 - Elements Partial Differential Equations (4)
- APM 4333 - Numerical Methods (4)
- APM 4334 - Applied Numerical Methods: Matrix Methods (4)
- BIO 1200 - Biology I (4)
- BIO 1300 - Biology II (4)
- BIO 2100 - Human Anatomy (4)
- BIO 2600 - Human Physiology (4)
- BIO 3400 - Genetics (4)
- CHM 1450 - General Chemistry II (4) **and** CHM 1480 - General Chemistry Laboratory II (1)
- MTH 2775 - Linear Algebra (4)
- MTH 3552 - Complex Variables (4)
- PHY 3250 - Biological Physics (4)
- PHY 3310 - Optics (4)
- PHY 3660 - Vibrations and Waves (4)
- PHY 3710 - Foundations of Modern Physics (4)
- **Other courses approved by petition to the SECS Committee on Academic Standing.**

Engineering Core

- EGR 1200 - Engineering Graphics and CAD (1)
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science (4)
- EGR 2400 - Introduction to Electrical and Computer Engineering (4)
- EGR 2500 - Introduction to Thermal Engineering (4)
- EGR 2600 - Introduction to Industrial and Systems Engineering (4)
- EGR 2800 - Design and Analysis of Electromechanical Systems (4)

Required Professional Subjects

- ME 3200 - Engineering Mechanics (4)
- ME 3250 - Mechanics of Materials (4)
- ME 3300 - Computer-Aided Design (3)
- ME 3500 - Introduction to Fluid and Thermal Energy Transport (4)

- ME 3700 - Properties of Materials (4)
- ME 4200 - Vibrations and Controls (4)
- ME 4300 - Mechanical Systems Design (4)
- ME 4500 - Energy Systems Analysis and Design (4)
- ME 4999 - Senior Mechanical Engineering Design Project (4) or ME 4998 - Senior Project (4)*

Note

*ME 4998 requires approval of project proposal by the Mechanical Engineering Department. If taken in place of ME 4999, it must be team-based and Capstone and Writing Intensive in the Major requirements must be approved via a General Education petition.

Professional Electives

Mechanical engineering students must complete at least 12 additional credits of 4000- or 5000-level ME, BE, ISE, or ECE designated courses (must have instructor's permission to take 5000-level courses). At least 8 of these credits must have an ME designation. Students interested in broadening their knowledge in a specific area of mechanical engineering should elect sequences of courses as described in the specialized professional depth areas listed below:

1. Energy, Fluid and Thermal Systems depth area. Includes courses in the fluid and thermal energy transport area.

Recommended fundamental subjects

- ME 4510 - Intermediate Fluid Mechanics (4)
- ME 4520 - Intermediate Heat Transfer (4)

Other relevant courses

- ME 4525 - Fuel Cell Science and Technology (4)
- ME 4530 - Renewable Energy (4)
- ME 4535 - Introduction to Electric Drive Vehicle Engineering (4)
- ME 4540 - Internal Combustion Engines I (4)
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles (4)
- ME 4550 - Fluid and Thermal Systems Design (4)
- ME 4570 - Sustainable Design for the Built Environment (4)
- ME 4590 - Energy and Sustainability Engineering Seminar and Practice (4)

2. Computer-Aided Design depth area. Includes courses in the computer-aided design (CAD) and analysis area.

Recommended fundamental subjects

- ME 4350 - Mechanical Computer-Aided Engineering (4)
- ME 4360 - Mechanical Computer-Aided Manufacturing (4)
- ME 4434 - Metamodeling and Optimization Methods in Design (4)

3. Automotive Engineering depth area. Includes courses with an automotive engineering emphasis area with two possible areas of specialty: automotive structures or internal combustion engines.

Recommended fundamental subjects: Automotive Structures Specialty

- ME 4210 - Analysis and Design of Mechanical Structures (4)
- ME 4220 - Vehicle Dynamics (4)

Recommended fundamental subjects: Internal Combustion Engines Specialty

- ME 4540 - Internal Combustion Engines I (4)

Other relevant courses

- ME 4205 - Controls and Diagnostics of Automotive Systems (4)
- ME 4230 - Automotive Driveline Dynamics (4)
- ME 4260 - Acoustics and Noise Control (4)
- ME 4350 - Mechanical Computer-Aided Engineering (4)
- ME 4434 - Metamodeling and Optimization Methods in Design (4)
- ME 4510 - Intermediate Fluid Mechanics (4)
- ME 4520 - Intermediate Heat Transfer (4)
- ME 4525 - Fuel Cell Science and Technology (4)
- ME 4535 - Introduction to Electric Drive Vehicle Engineering (4)
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles (4)
- ME 4730 - Fasteners and Bolted Joints (4)
- ME 4750 - Optical Measurement and Quality Inspection (4)
- ECE 4110 - Automotive Electronics (4)
- ECE 4400 - Automatic Control Systems (4)
- ECE 4520 - Automotive Mechatronics I (4)

4. Manufacturing Engineering depth area. This depth area includes courses in the manufacturing area.

Recommended fundamental subjects

- ME 4600 - Materials Properties and Processes (4)
- ME 4701 - Manufacturing Processes (4)

Other relevant courses

- ME 4710 - Flexible and Lean Manufacturing Systems (4)
- ME 4750 - Optical Measurement and Quality Inspection (4)
- ME 4740 - Robotic Systems (4)
- ME 4360 - Mechanical Computer-Aided Manufacturing (4)
- ECE 4400 - Automatic Control Systems (4)

- ISE 4485 - Statistical Quality Analysis (4)

5. Materials Engineering depth area. This depth area includes courses in the areas of basic and advanced materials, plastics and composites manufacturing

Recommended fundamental subjects

- ME 4610 - Polymeric Materials (4)
- ME 4600 - Materials Properties and Processes (4)
- **ME 5530 - Plastics Processing Engineering (4)**

6. Nuclear Engineering depth area. This depth area includes courses in the nuclear engineering area.

Required fundamental subjects

- ME 4520 - Intermediate Heat Transfer (4)
- ME 4580 - Fundamentals of Nuclear Engineering (3)
- ME 4585 - Nuclear Reactors and Power Plants (3)
- PHY 3180 - Nuclear Physics Laboratory (2) (PHY 3180 (2) **requires** ME 4580 (3) **as a pre or co-requisite**)

Optional Specializations or Concentrations:

The Mechanical Engineering Department offers optional specializations/concentrations in Automotive Engineering, Manufacturing, Energy, and Electrified Propulsion to students interested in broadening their knowledge in a specific area of mechanical engineering and wishing an area of specialization in their degree. These specializations/concentrations are only applicable for students enrolled in the Bachelor of Science degree in Mechanical Engineering. The sequences of courses listed below for each specialization/concentration are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Mechanical Engineering with a specialization or concentration may require more than 128 credits. Students may earn only one specialization/concentration and the specialization/concentration must be completed as part of their degree. The specialization or concentration will be noted on the students' transcript.

1. Automotive Engineering Specialization

The Automotive Engineering Specialization includes courses related to powertrain, vehicle dynamics, as well as systems integration as they relate to vehicle design.

See adviser for complete details on specialization.

Required fundamental subjects - 8 credits, choose two courses

- ME 4220 - Vehicle Dynamics (4)
- ME 4350 - Mechanical Computer-Aided Engineering (4)
- ME 4535 - Introduction to Electric Drive Vehicle Engineering (4)
- ME 4540 - Internal Combustion Engines I (4)

Select at least 8 credits from the following

- ME 4205 - Controls and Diagnostics of Automotive Systems (4)
- ME 4220 - Vehicle Dynamics (4) **If not taken as a fundamental subject**
- ME 4230 - Automotive Driveline Dynamics (4)
- ME 4260 - Acoustics and Noise Control (4)
- ME 4350 - Mechanical Computer-Aided Engineering (4) **If not taken as a fundamental subject**
- ME 4510 - Intermediate Fluid Mechanics (4)
- ME 4535 - Introduction to Electric Drive Vehicle Engineering (4) **If not taken as a fundamental subject**
- ME 4540 - Internal Combustion Engines I (4) **If not taken as a fundamental subject**
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles (4)
- ME 4630 - Lubrication, Friction, and Wear (4)
- ME 4803 - PREP III: Powertrain Readiness Engineering Program (2)
- ME 4804 - PREP IV: Powertrain Readiness Engineering Program (2)
- ME 4900 - Special Topics (2 TO 4) **with prior approval**
- ME 4995 - Directed Research (4) **with prior approval**
- ME 4996 - Independent Study (1 TO 4) **with prior approval**
- **ME 5900 - Special Topics (2 TO 4) with prior approval**
- **ME 5560 - Combustion processes (4)**
- ECE 4110 - Automotive Electronics (4)
- ECE 4520 - Automotive Mechatronics I (4)

2. Manufacturing Specialization

The Manufacturing Specialization includes courses related to manufacturing processes for metals and plastics as well as manufacturing systems.

See adviser for complete details on specialization.

Fundamental subjects - 8 credits, choose two courses

- ME 4360 - Mechanical Computer-Aided Manufacturing (4)
- ME 4600 - Materials Properties and Processes (4)
- ME 4701 - Manufacturing Processes (4)

Select at least additional 8 credits from the following

- ME 4360 - Mechanical Computer-Aided Manufacturing (4) **If not taken as a fundamental subject**
- ME 4600 - Materials Properties and Processes (4) **If not taken as a fundamental subject**
- ME 4701 - Manufacturing Processes (4) **If not taken as a fundamental subject**
- ME 4710 - Flexible and Lean Manufacturing Systems (4)
- ME 4740 - Robotic Systems (4)
- ME 4750 - Optical Measurement and Quality Inspection (4)
- ME 4900 - Special Topics (2 TO 4) **with prior approval**
- ME 4995 - Directed Research (4) **with prior approval**
- ME 4996 - Independent Study (1 TO 4) **with prior approval**
- **ME 5900 - Special Topics (2 TO 4) with prior approval**
- **ME 5700 - Polymer Processing (4)**
- ECE 4400 - Automatic Control Systems (4)
- ISE 4485 - Statistical Quality Analysis (4)

3. Energy Specialization

The Energy Specialization includes fundamental courses in energy systems as well as fundamental courses in the fluid and thermal sciences.

See adviser for complete details on specialization.

Required fundamental subjects - 8 credits, choose two courses

- ME 4510 - Intermediate Fluid Mechanics (4)
- ME 4520 - Intermediate Heat Transfer (4)
- ME 4530 - Renewable Energy (4)

Select at least 8 credits from the following:

- ME 4510 - Intermediate Fluid Mechanics (4) **if not taken as a fundamental subject**
- ME 4520 - Intermediate Heat Transfer (4) **if not taken as a fundamental subject**
- ME 4530 - Renewable Energy (4) **if not taken as a fundamental subject**
- ME 4535 - Introduction to Electric Drive Vehicle Engineering (4)
- ME 4540 - Internal Combustion Engines I (4)
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles (4)
- ME 4550 - Fluid and Thermal Systems Design (4)
- ME 4580 - Fundamentals of Nuclear Engineering (3)
- ME 4585 - Nuclear Reactors and Power Plants (3)
- ME 4900 - Special Topics (2 TO 4) **with prior approval**
- ME 4995 - Directed Research (4) **with prior approval**
- ME 4996 - Independent Study (1 TO 4) **with prior approval**
- ME 5900 - Special Topics (2 TO 4) **with prior approval**
- ME 5560 - Combustion Processes (4)
- PHY 3180 - Nuclear Physics Laboratory (2) **(requires ME 4580 (3) as a pre- or co-requisite)**

4. Electrified Propulsion Concentration

The Electrified Propulsion Concentration includes courses related to electric and hybrid-electric powertrain, driveline dynamics, controls, and systems integration as they relate to vehicle powertrain design.

See adviser for complete details on concentration.

Required fundamental subjects - 8 credits

- ME 4535 - Introduction to Electric Drive Vehicle Engineering (4)
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles (4)

Select at least 8 credits from the following

- ME 4205 - Controls and Diagnostics of Automotive Systems (4)
- ME 4230 - Automotive Driveline Dynamics (4)
- ME 4540 - Internal Combustion Engines I (4)

- ME 4803 - PREP III: Powertrain Readiness Engineering Program (2)
- ME 4804 - PREP IV: Powertrain Readiness Engineering Program (2)
- ME 4900 - Special Topics (2 TO 4) with prior approval
- ME 4995 - Directed Research (4) with prior approval
- ME 4996 - Independent Study (1 TO 4) with prior approval
- ME 5310 - Machine Learning in Engineering Design (4)
- ECE 4110 - Automotive Electronics (4)
- ECE 4400 - Automatic Control Systems (4)
- ECE 4520 - Automotive Mechatronics I (4)
- ECE 4610 - Introduction to Power Electronics (4)
- ECE 4630 - Electric and Hybrid Drive Systems (4)

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science in Engineering with a major in Mechanical Engineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Students can obtain the major standing form from the SECS Undergraduate Advising Website. At the time that major standing is approved, students with majors of Pre-Mechanical Engineering will have their major changed to Mechanical Engineering. Approval of both a major standing application and change of major to Mechanical Engineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Mechanical Engineering, students must:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510, PHY 1520;

B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800. Note that some mechanical engineering courses require a minimum grade of C in EGR 2500 or EGR 2800;

C) have no more than two grades below C in the required courses in A and B above;

D) have not attempted any course listed in A and B above more than three times; and

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and professional electives) and a grade of C or better in the senior design capstone course (ME 4999 or ME 4998). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three repeat attempts per course are permitted.

Sample mechanical engineering schedule

Students entering the School of Engineering and Computer Science with the required background may follow a schedule such as the one indicated below. However, students will need additional time to complete the program if they do not have the required background upon entrance to the program.

Freshman year

Fall semester -- 17 total credits

- CHM 1440 - General Chemistry I **(4)**
- EGR 1200 - Engineering Graphics and CAD **(1)**
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science **(4)**
- MTH 1554 - Calculus I **(4)**
- **General Education (4)**

Winter semester -- 16 total credits

- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)**
- MTH 1555 - Calculus II **(4)**
- PHY 1510 - Introductory Physics I **(4)**
- **General Education (4)**

Sophomore year

Fall semester -- 16 total credits

- APM 2555 - Introduction to Differential Equations with Matrix Algebra **(4)**
- EGR 2500 - Introduction to Thermal Engineering **(4)**
- PHY 1520 - Introductory Physics II **(4)**
- **General Education (4)**

Winter semester -- 16 total credits

- EGR 2600 - Introduction to Industrial and Systems Engineering **(4)**
- EGR 2800 - Design and Analysis of Electromechanical Systems **(4)**
- MTH 2554 - Multivariable Calculus **(4)**
- **General Education (4)**

Junior year

Fall semester -- 16 total credits

- ME 3200 - Engineering Mechanics **(4)**
- ME 3500 - Introduction to Fluid and Thermal Energy Transport **(4)**
- ME 3700 - Properties of Materials **(4)**
- **General Education (4)**

Winter semester -- 15 total credits

- ME 3250 - Mechanics of Materials (4)
- ME 3300 - Computer-Aided Design (3)
- **Professional Elective (4)**
- **Approved Math/Science elective (4)**

Senior year

Fall semester -- 16 total credits

- ME 4200 - Vibrations and Controls (4)
- ME 4500 - Energy Systems Analysis and Design (4)
- **Professional Elective (4)**
- **General Education (4)**

Winter semester -- 16 total credits

- ME 4300 - Mechanical Systems Design (4)
- ME 4999 - Senior Mechanical Engineering Design Project (4)
- **Professional Elective (4)**
- **General Education (4)**

Mechanical Engineering, B.S.E., Concentration in Electrified Propulsion

Department Website

The Mechanical Engineering Department offers optional specializations or concentrations in Automotive Engineering, Manufacturing, Energy, and Electrified Propulsion to students interested in broadening their knowledge in a specific area of mechanical engineering and wishing an area of concentration in their degree. The concentration is only applicable for any student enrolled in the Bachelor of Science degree in Mechanical Engineering. The sequences of courses listed below for each concentration are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Mechanical Engineering with a concentration may require more than 128 credits. Students may earn only one concentration or specialization and the concentration must be completed as part of their degree. The concentration will be noted on the students' transcript.

See Mechanical Engineering, B.S.E. and adviser for complete details on concentration.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Mechanical Engineering, B.S.E., Concentration in Electrified Propulsion

The Electrified Propulsion Concentration includes courses related to electric and hybrid-electric powertrain, driveline dynamics, controls, and systems integration as they relate to vehicle powertrain design.

Required fundamental subjects - 8 credits

- ME 4535 - Introduction to Electric Drive Vehicle Engineering (4)
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles (4)

Select at least 8 credits from the following

- ME 4205 - Controls and Diagnostics of Automotive Systems (4)
- ME 4230 - Automotive Driveline Dynamics (4)
- ME 4540 - Internal Combustion Engines I (4)
- ME 4803 - PREP III: Powertrain Readiness Engineering Program (2)
- ME 4804 - PREP IV: Powertrain Readiness Engineering Program (2)
- ME 4900 - Special Topics (2 TO 4) with prior approval
- ME 4995 - Directed Research (4) with prior approval
- ME 4996 - Independent Study (1 TO 4) with prior approval
- ME 5310 - Machine Learning in Engineering Design (4)
- ECE 4110 - Automotive Electronics (4)
- ECE 4400 - Automatic Control Systems (4)
- ECE 4520 - Automotive Mechatronics I (4)
- ECE 4610 - Introduction to Power Electronics (4)
- ECE 4630 - Electric and Hybrid Drive Systems (4)

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science in Engineering with a major in Mechanical Engineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Forms may be obtained from the SECS Undergraduate advising office or from the SECS website. At the time that major standing is approved, students with majors of Pre-Mechanical Engineering will have their major changed to Mechanical Engineering. Approval of both a major standing application and change of major to Mechanical Engineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Mechanical Engineering, students must:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510, PHY 1520;

B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800. Note that some mechanical engineering courses require a minimum grade of C in EGR 2500 or EGR 2800;

C) have no more than two grades below C in the required courses in A and B above;

D) have not attempted any course listed in A and B above more than three times; and

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance Requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and professional electives) and a grade of C or better in the senior design capstone course (ME 4999 or ME 4998). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three repeat attempts per course are permitted.

Mechanical Engineering, B.S.E., Specialization in Automotive Engineering

Department Website

The Mechanical Engineering Department offers optional specializations or concentrations in Automotive Engineering, Manufacturing, Energy, and Electrified Propulsion to students interested in broadening their knowledge in a specific area of mechanical engineering and wishing an area of specialization in their degree. These specializations are only applicable for any student enrolled in the Bachelor of Science degree in Mechanical Engineering. The sequences of courses listed below for each specialization are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Mechanical Engineering with a specialization may require more than 128 credits. Students may earn only one specialization or concentration and the specialization must be completed as part of their degree. The specialization will be noted on the students' transcript.

See Mechanical Engineering, B.S.E. and adviser for complete details on specialization.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Mechanical Engineering, B.S.E., Specialization in Automotive Engineering

The Automotive Engineering Specialization includes courses related to powertrain, vehicle dynamics, as well as systems integration as they relate to vehicle design.

Fundamental subjects - 8 credits, choose two courses

- ME 4220 - Vehicle Dynamics **(4)**
- ME 4350 - Mechanical Computer-Aided Engineering **(4)**
- ME 4535 - Introduction to Electric Drive Vehicle Engineering **(4)**
- ME 4540 - Internal Combustion Engines I **(4)**

Select at least 8 credits, from the following

- ME 4205 - Controls and Diagnostics of Automotive Systems **(4)**
- ME 4220 - Vehicle Dynamics **(4) if not taken as a fundamental subject**
- ME 4230 - Automotive Driveline Dynamics **(4)**
- ME 4260 - Acoustics and Noise Control **(4)**
- ME 4350 - Mechanical Computer-Aided Engineering **(4) if not taken as a fundamental subject**
- ME 4510 - Intermediate Fluid Mechanics **(4)**
- ME 4535 - Introduction to Electric Drive Vehicle Engineering **(4) if not taken as a fundamental subject**

- ME 4540 - Internal Combustion Engines I **(4) if not taken as a fundamental subject**
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles **(4)**
- ME 4630 - Lubrication, Friction, and Wear **(4)**
- ME 4803 - PREP III: Powertrain Readiness Engineering Program **(2)**
- ME 4804 - PREP IV: Powertrain Readiness Engineering Program **(2)**
- ME 4900 - Special Topics **(2 TO 4) with prior approval**
- ME 4995 - Directed Research **(4) with prior approval**
- ME 4996 - Independent Study **(1 TO 4) with prior approval**
- **ME 5900 - Special Topics (2 TO 4) with prior approval**
- **ME 5560 - Combustion Processes (4) with prior approval**
- ECE 4110 - Automotive Electronics **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science in Engineering with a major in Mechanical Engineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Forms may be obtained from the SECS Undergraduate advising office or from the SECS website. At the time that major standing is approved, students with majors of Pre-Mechanical Engineering will have their major changed to Mechanical Engineering. Approval of both a major standing application and change of major to Mechanical Engineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Mechanical Engineering, students must:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510, PHY 1520;

B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800. Note that some mechanical engineering courses require a minimum grade of C in EGR 2500 or EGR 2800;

C) have no more than two grades below C in the required courses in A and B above;

D) have not attempted any course listed in A and B above more than three times; and

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance Requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and professional electives) and a grade of C or better in the senior design capstone course (ME 4999 or ME 4998). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three repeat attempts per course are permitted.

Mechanical Engineering, B.S.E., Specialization in Energy

Department Website

The Mechanical Engineering Department offers optional specializations or concentrations in Automotive Engineering, Manufacturing, Energy and Electrified Propulsion to students interested in broadening their knowledge in a specific area of mechanical engineering and wishing an area of specialization in their degree. These specializations are only applicable for any student enrolled in the Bachelor of Science degree in Mechanical Engineering. The sequences of courses listed below for each specialization are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Mechanical Engineering with a specialization may require more than 128 credits. Students may earn only one specialization or concentration and the specialization must be completed as part of their degree. The specialization will be noted on the students' transcript.

See Mechanical Engineering, B.S.E. and adviser for complete details on specialization.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Mechanical Engineering, B.S.E., Specialization in Energy

The Energy Specialization includes fundamental courses in energy systems as well as fundamental courses in the fluid and thermal sciences.

Required fundamental subjects - 8 credits

- ME 4510 - Intermediate Fluid Mechanics **(4)** or ME 4520 - Intermediate Heat Transfer **(4)**
- ME 4530 - Renewable Energy **(4)**

Select at least 8 credits from the following (if not taken as a required fundamental subject)

- ME 4510 - Intermediate Fluid Mechanics **(4)**
- ME 4520 - Intermediate Heat Transfer **(4)**
- ME 4535 - Introduction to Electric Drive Vehicle Engineering **(4)**
- ME 4540 - Internal Combustion Engines I **(4)**
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles **(4)**
- ME 4550 - Fluid and Thermal Systems Design **(4)**
- ME 4580 - Fundamentals of Nuclear Engineering **(3)**
- ME 4585 - Nuclear Reactors and Power Plants **(3)**
- ME 4900 - Special Topics **(2 TO 4) with prior approval**
- ME 4995 - Directed Research **(4) with prior approval**
- ME 4996 - Independent Study **(1 TO 4) with prior approval**
- ME 5560 - Combustion Processes **(4) with prior approval**
- ME 5900 - Special Topics **(2 TO 4) with prior approval**
- PHY 3180 - Nuclear Physics Laboratory **(2) (requires ME 4580 (3) as a pre- or co-requisite)**

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science in Engineering with a major in Mechanical Engineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Forms may be obtained from the SECS Undergraduate advising office or from the SECS website. At the time that major standing is approved, students with majors of Pre-Mechanical

Engineering will have their major changed to Mechanical Engineering. Approval of both a major standing application and change of major to Mechanical Engineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Mechanical Engineering, students must:

- A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510, PHY 1520;
- B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800. Note that some mechanical engineering courses require a minimum grade of C in EGR 2500 or EGR 2800;
- C) have no more than two grades below C in the required courses in A and B above;
- D) have not attempted any course listed in A and B above more than three times; and
- E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance Requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and professional electives) and a grade of C or better in the senior design capstone course (ME 4999 or ME 4998). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three repeat attempts per course are permitted.

Mechanical Engineering, B.S.E., Specialization in Manufacturing

Department Website

The Mechanical Engineering Department offers optional specializations or concentrations in Automotive Engineering, Manufacturing, Energy and Electrified Propulsion to students interested in broadening their knowledge in a specific area of mechanical engineering and wishing an area of specialization in their degree. These specializations are only applicable for any student enrolled in the Bachelor of Science degree in Mechanical Engineering. The sequences of courses listed below for each specialization are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Mechanical Engineering with a specialization may require more than 128 credits. Students may earn only one specialization or concentration and the specialization must be completed as part of their degree. The specialization will be noted on the students' transcript.

See Mechanical Engineering, B.S.E. and adviser for complete details on specialization.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Mechanical Engineering, B.S.E., Specialization in Manufacturing

The Manufacturing Specialization includes courses related to manufacturing processes for metals and plastics as well as manufacturing systems.

Fundamental subjects - 8 credits, choose two courses

- ME 4360 - Mechanical Computer-Aided Manufacturing (4)
- ME 4600 - Materials Properties and Processes (4)
- ME 4701 - Manufacturing Processes (4)

Select at least additional 8 credits from the following:

- ME 4360 - Mechanical Computer-Aided Manufacturing (4) **if not taken as a fundamental subject**
- ME 4600 - Materials Properties and Processes (4) **if not taken as a fundamental subject**
- ME 4701 - Manufacturing Processes (4)
- ME 4710 - Flexible and Lean Manufacturing Systems (4)
- ME 4740 - Robotic Systems (4)
- ME 4750 - Optical Measurement and Quality Inspection (4)
- ME 4900 - Special Topics (2 TO 4) **with prior approval**
- ME 4995 - Directed Research (4) **with prior approval**
- ME 4996 - Independent Study (1 TO 4) **with prior approval**
- **ME 5700 - Polymer Processing (4)**
- **ME 5900 - Special Topics (2 TO 4) with prior approval**
- ECE 4400 - Automatic Control Systems (4)
- ISE 4485 - Statistical Quality Analysis (4)

Major Standing

To enroll in 3000- or higher level courses and to become candidates for the degree of Bachelor of Science in Engineering with a major in Mechanical Engineering, students must gain major standing. An application for major standing should be submitted prior to intended enrollment in 3000- or higher level courses. Forms may be obtained from the SECS Undergraduate advising office or from the SECS website. At the time that major standing is approved, students with majors of Pre-Mechanical Engineering will have their major changed to Mechanical Engineering. Approval of both a major standing application and change of major to Mechanical Engineering is required prior to enrolling in any 3000- or higher-level courses.

To gain major standing in Mechanical Engineering, students must:

A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510, PHY 1520.

B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800. Note that some mechanical engineering courses require a minimum grade of C in EGR 2500 or EGR 2800.

C) have no more than two grades below C in the required courses in A and B above;

D) have not attempted any course listed in A and B above more than three times; and

E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Conditional major standing may be granted in the semester in which the student will complete the courses listed in A and B above.

Performance Requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and professional electives) and a grade of C or better in the senior design capstone course (ME 4999 or ME 4998). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three repeat attempts per course are permitted.

Mechatronics and Robotics Engineering, B.S.E. (Pending Approvals)

Department Website

Program educational objectives

The undergraduate program in Mechatronics and Robotics Engineering, B.S.E. will provide educational experiences aimed toward producing graduates who will:

- Become successful practitioners in an engineering or related career.
- Pursue graduate study and/or continuing education opportunities in electrical engineering, computer engineering, or other related disciplines.
- Demonstrate leadership and excel in multidisciplinary and multicultural environments.
- Function as responsible members of society with an awareness of the ethical and social ramifications of their work.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the major in Mechatronics and Robotics Engineering, B.S.E. program

General Education requirements

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, and Integration. For details, refer to the General Education Requirements section of the catalog. In order to satisfy both general education and other program requirements, in some of the general education areas students should select from courses listed below.

Foundations:

- Writing Foundations - WRT 1060
- Formal Reasoning (Satisfied by MTH 1554 for engineering majors; see Mathematics and sciences)

Explorations: One course from each of the seven Explorations areas:

- Arts

- Language and Culture
- Global Perspective
- Literature
- Natural Science and Technology (satisfied by EGR 2400 or EGR 2500; see engineering core)
- Social Science (satisfied by ECN 1500, ECN 2010, or ECN 2020; see Additional Major Requirements)
- Western Civilization (satisfied by PHL 1310; see Additional Major Requirements)

Integration:

- Knowledge Applications (satisfied by MTH 1555; see Mathematics and sciences)
- Capstone (satisfied by ECE 4999; see Required Professional Subjects)

U.S. Diversity:

- May be met by an approved course in the Explorations area

Writing Intensive:

- Writing Intensive in the Major (satisfied by ECE 4999; see Required Professional Subjects)
- Writing Intensive in General Education (may be met by an approved course in the Explorations area)

Additional Major Requirements:

All students must meet the following requirements. Courses from these selections can meet general education exploration areas above,

- Professional Ethics: PHL 1310
- Economics: Choose one from ECN 1500, ECN 2010, or ECN 2020

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an SECS Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Mathematics and Sciences

Students must complete at least 30 credits in the required math/science area. Students with fewer than 30 credit hours of math/science, for example due to transfers from another institution, must take additional courses to satisfy this requirement. Additional courses in math/science must be from the approved Math/Science Elective Options listed below.

- APM 2555 - Introduction to Differential Equations with Matrix Algebra **(4)**
- CHM 1440 - General Chemistry I **(4)**
- MTH 1554 - Calculus I **(4)**
- MTH 1555 - Calculus II **(4)**
- MTH 2554 - Multivariable Calculus **(4)**
- PHY 1510 - Introductory Physics I **(4)**
- PHY 1520 - Introductory Physics II **(4)**
- **Approved Math/Science Elective from list below**

Approved Math/Science Elective Options:

Students majoring in Mechatronics and Robotics Engineering are advised to take MTH 2775 to broaden their knowledge of Linear Algebra. However, students who have an explicit interest in broadening their knowledge in another area of math or science should select an elective from the following approved course list:

- APM 2663 - Discrete Mathematics **(4)**
- APM 3332 - Applied Matrix Theory **(4)**

- APM 3557 - Elements Partial Differential Equations **(4)**
- APM 4333 - Numerical Methods **(4)**
- APM 4334 - Applied Numerical Methods: Matrix Methods **(4)**
- APM 4555 - Intermediate Ordinary Differential Equations **(4)**
- APM 4663 - Applied Mathematics: Discrete Methods I **(4)**
- APM 4777 - Computer Algebra **(4)**
- BIO 1200 - Biology I **(4)**
- BIO 1300 - Biology II **(4)**
- BIO 2100 - Human Anatomy **(4)**
- BIO 2600 - Human Physiology **(4)**
- BIO 3220 - Neurobiology **(4)**
- BIO 3400 - Genetics **(4)**
- BIO 4412 - Functional Genomics and Bioinformatics **(4)**
- CHM 1450 - General Chemistry II **(4)**
- MTH 2775 - Linear Algebra **(4)**
- MTH 3552 - Complex Variables **(4)**
- PHY 3250 - Biological Physics **(4)**
- PHY 3260 - Medical Physics **(4)**
- PHY 3310 - Optics **(4)**
- PHY 3610 - Mechanics I **(4)**
- PHY 3660 - Vibrations and Waves **(4)**
- PHY 3710 - Foundations of Modern Physics **(4)**
- PHY 4310 - Lasers and Applications **(4)**
- STA 2226 - Applied Probability and Statistics **(4)**
- **or others by petition to the SECS Committee on Academic Standing**

Engineering Core

- EGR 1200 - Engineering Graphics and CAD **(1)**
- EGR 1400 - Computer Problem Solving in Engineering and Computer Science **(4)**
- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)**
- EGR 2500 - Introduction to Thermal Engineering **(4)**
- EGR 2600 - Introduction to Industrial and Systems Engineering **(4)**
- EGR 2800 - Design and Analysis of Electromechanical Systems **(4)**

Required Professional Subjects

Required

- ECE 2005 - Electric Circuits **(4)**
- ECE 3204 - Signals and Systems **(4)**
- ECE 3540 - Introduction to ROS **(4)**
- ECE 4999 - Senior Design **(4)** or ME 4999 - Senior Mechanical Engineering Design Project **(4)**

Choose any two courses from the list below:

Some of these courses are prerequisites of the Professional Elective courses.

- ECE 3100 - Electronic Circuits and Devices I **(4)**
- ECE 3105 - Electronic Circuits and Devices II **(4)**
- ECE 3600 - Electrical Machines **(4)**
- ECE 4731 - Fundamentals of Embedded System Design **(4)**
- ME 3200 - Engineering Mechanics **(4)**
- ME 3250 - Mechanics of Materials **(4)**
- ME 3300 - Computer-Aided Design **(3)**

Professional Electives

Students must complete 6 professional elective courses. To complete this requirement, students can either select a concentration or select courses from any of the depth areas listed below. Students interested in selecting a concentration can find the requirements printed following the list of depth areas.

Depth Areas:

Automotive Mechatronics Systems

- ECE 4134 - Fundamentals of MEMS **(4)**
- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**

Autonomous Vehicles

- ECE 4510 - Machine Vision **(4)**
- ECE 4532 - Autonomous Vehicle Systems I **(4)**
- ECE 4740 - Embedded Artificial Intelligence (AI) **(4)**

Electric Drives and Powertrains

- ECE 4610 - Introduction to Power Electronics **(4)**
- ECE 4630 - Electric and Hybrid Drive Systems **(4)**
- ECE 4640 - Battery Management Systems **(4)**

Human-Robot Interaction

- ECE 4551 - Human Robot Interaction **(4)**

Industrial Robotics and Automation

- ECE 4500 - Robotic Systems and Control **(4)**
- ECE 4510 - Machine Vision **(4)**
- ISE 4423 - Industrial Automation Systems **(4)**

Intelligent Robotics and Controls

- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4500 - Robotic Systems and Control **(4)**
- ECE 4740 - Embedded Artificial Intelligence (AI) **(4)**

Concentrations

The Electrical and Computer Engineering Department offers optional concentrations in Automotive Mechatronic Systems, Autonomous Vehicles, Electric Drives and Powertrains, Human-Robot Interaction, Industrial Robotics and Automation, and Intelligent Robotics and Controls to students interested in broadening their knowledge in a specific area of mechatronics and robotics engineering and wishing an area of concentration in their degree. The following concentrations are available to, but not required of, any student enrolled in the Bachelor of Science degree in Mechatronics and Robotics Engineering. The sequences of courses listed below for each concentration are taken to satisfy the professional electives requirement. Note that completing the Bachelor of Science degree in Mechatronics and Robotics Engineering with a concentration may require more than 129 credits. Students may earn only one concentration and the concentration must be completed as part of their degree. The concentration will be noted on the students' transcript.

1. Automotive Mechatronics Systems

Required Courses

- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**

Electives (Choose 3 courses)

- ECE 4134 - Fundamentals of MEMS **(4)**
- ECE 4510 - Machine Vision **(4)**
- ECE 4532 - Autonomous Vehicle Systems I **(4)**
- ECE 4731 - Fundamentals of Embedded System Design **(4)**
- ME 4200 - Vibrations and Controls **(4)**
- ME 4205 - Controls and Diagnostics of Automotive Systems **(4)**
- ME 4220 - Vehicle Dynamics **(4)**
- ME 4540 - Internal Combustion Engines I **(4)**

2. Autonomous Vehicles

Required Courses

- ECE 4510 - Machine Vision **(4)**
- ECE 4532 - Autonomous Vehicle Systems I **(4)**
- ECE 4740 - Embedded Artificial Intelligence (AI) **(4)**

Electives (Choose 3 courses)

- ECE 4400 - Automatic Control Systems (4)
- ECE 4415 - Microcomputer-based Control Systems (4)
- ECE 4520 - Automotive Mechatronics I (4)
- ECE 4731 - Fundamentals of Embedded System Design (4)
- ME 4205 - Controls and Diagnostics of Automotive Systems (4)
- ME 4220 - Vehicle Dynamics (4)

3. Electric Drives and Powertrains

Required Courses

- ECE 4610 - Introduction to Power Electronics (4)
- ECE 4630 - Electric and Hybrid Drive Systems (4)
- ECE 4640 - Battery Management Systems (4)

Electives (Choose 3 courses)

- ECE 4400 - Automatic Control Systems (4)
- ECE 4520 - Automotive Mechatronics I (4)
- ECE 4600 - Fundamentals of AC Motor Design (4)
- ME 4525 - Fuel Cell Science and Technology (4)
- ME 4535 - Introduction to Electric Drive Vehicle Engineering (4)
- ME 4545 - Fundamentals of Battery Systems for Hybrid & Electric Vehicles (4)

4. Human-Robot Interaction

Required Course

- ECE 4551 - Human Robot Interaction (4)

Electives (Choose 5 courses)

- BE 3150 - Bioinstrumentation (4)
- BE 4100 - Biomedical Signal Processing (4)
- CSI 3500 - Human Computer Interaction (4)
- CSI 4130 - Artificial Intelligence (4)
- CSI 4810 - Information Retrieval and Knowledge Discovery (4)
- ECE 4500 - Robotic Systems and Control (4)
- ECE 4510 - Machine Vision (4)
- ECE 4532 - Autonomous Vehicle Systems I (4)
- ECE 4740 - Embedded Artificial Intelligence (AI) (4)

- ISE 3341 - Ergonomics and Work Design **(4)**

5. Industrial Robotics and Automation

Required Courses

- ISE 4423 - Industrial Automation Systems **(4)**
- ECE 4500 - Robotic Systems and Control **(4)**
- ECE 4510 - Machine Vision **(4)**

Electives (12 credits)

- ISE 4431 - Engineering Operations Research - Stochastic Models **(4)**
- ISE 4461 - PLM Applications - Product Data Management **(2)**
- ISE 4462 - PLM Applications- Robotic Systems **(2)**
- ISE 4463 - PLM Applications - Ergonomics **(2)**
- ISE 4464 - Design for Manufacturing and Assembly Analysis **(4)**
- ISE 4466 - PLM Applications - Change Management **(2)**
- ISE 4467 - PLM Applications - Throughput Simulation **(2)**
- ECE 4551 - Human Robot Interaction **(4)**
- ISE 4483 - Production Systems and Workflow Analysis **(4)**
- ME 4360 - Mechanical Computer-Aided Manufacturing **(4)**

6. Intelligent Robotics and Controls

Required Courses

- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4500 - Robotic Systems and Control **(4)**
- ECE 4740 - Embedded Artificial Intelligence (AI) **(4)**

Electives (Choose 3 courses)

- CSI 4130 - Artificial Intelligence **(4)**
- CSI 4810 - Information Retrieval and Knowledge Discovery **(4)**
- ECE 4410 - Digital Control Systems **(4)**
- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4510 - Machine Vision **(4)**
- ECE 4551 - Human Robot Interaction **(4)**
- ME 4200 - Vibrations and Controls **(4)**

Major standing

To gain major standing in Mechatronics and Robotics Engineering, students must:

- A) have an average GPA of 2.0 in the following mathematics and science courses: MTH 1554, MTH 1555, APM 2555, CHM 1440, PHY 1510 and PHY 1520;
- B) have an average GPA of 2.0 in the following engineering core courses: EGR 1200, EGR 1400, EGR 2400, EGR 2500, EGR 2600, EGR 2800;
- C) have no more than two grades below C in the required courses in A and B above;
- D) have not attempted any course listed in A and B above more than three times; and
- E) have not repeated more than three different courses listed in A and B. Courses in which a W (withdrawal) grade is recorded will not be counted.

Performance requirements

Satisfactory completion of the program requires a GPA of at least 2.0 within each course group: mathematics and sciences, engineering core, and professional courses (including required professional subjects and concentration/elective) and a grade of C or better in the senior design capstone course (ECE 4999). Within professional courses, at most two grades below C are permitted, at most two different courses may be repeated, and a total of three attempts per course are permitted.

Combined Bachelor/Masters

Computer Science, B.S., Software Engineering and Information Technology, M.S., Combined B.S./M.S.

Department Website

The Combined BS/MS in Computer Science (BS) and Software Engineering and Information Technology (MS) is a combined bachelor/master degree program that provides students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently.

Students accepted for the BS/MS Program must have a minimum overall undergraduate GPA of 3.2. Students may apply to the BS/MS Program and be offered deferred admission to the graduate program during their junior year.

It is important that students register for the 12 credits of 5000-level classes that are double counted in order to satisfy the electives requirement for the Computer Science major as well as get credit towards the BS/MS Program. Any 5000-level CSI courses that are cross-listed with 4000-level CSI courses, with the approval of the CSE academic programs coordinator, will meet the requirement. If students take the 4000-level courses, those courses cannot be counted for the BS/MS degree.

Students offered deferred admission will remain classified as undergraduates until they have completed all undergraduate degree requirements. At that time, students who have maintained an overall undergraduate GPA 3.2 and have earned a 3.0 or above GPA in the double-counted graduate courses, will be reclassified as a graduate student through the Graduate School.

Specific offerings for each semester may be found in the Schedule of Classes.

To be eligible for the Computer Science/Software Engineering and Information Technology, Combined B.S./M.S. option, students must:

1. Have a major GPA of 3.2 or above.
2. Apply for and receive delayed admission in the M.S. program and thereby the double-counting of three graduate classes (12 credits)
3. Maintain a minimum 3.2 cumulative GPA to completion of the degree in Computer Science, B.S.

Computer Science, B.S./Cybersecurity, M.S., Combined B.S./M.S.

Department Website

The Combined BS/MS in Computer Science (BS) and Cyber Security (MS) is a combined bachelor/master degree program that provides students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently.

Students accepted for the BS/MS Program must have a minimum overall undergraduate GPA of 3.2. Students may apply to the BS/MS Program and be offered deferred admission to the graduate program during their junior year.

It is important that students register for the 12 credits of 5000-level classes that are double counted in order to satisfy the electives requirement for the Computer Science major as well as get credit towards the BS/MS Program. Any 5000-level CSI courses that are cross-listed with 4000-level CSI courses, with the approval of the CSE academic programs coordinator, will meet the requirement. If students take the 4000-level courses, those courses cannot be counted for the BS/MS degree.

Students offered deferred admission will remain classified as undergraduates until they have completed all undergraduate degree requirements. At that time, students who have maintained an overall undergraduate GPA 3.2 and have earned a 3.0 or above GPA in the double-counted graduate courses, will be reclassified as a graduate student through the Graduate School.

Specific offerings for each semester may be found in the Schedule of Classes.

To be eligible for the Computer Science/Cybersecurity, Combined B.S./M.S. option, students must:

1. Have a major GPA of 3.2 or above.
2. Apply for and receive delayed admission in the M.S. program and thereby the double-counting of three graduate classes (12 credits)
3. Maintain a minimum 3.2 cumulative GPA to completion of the degree in Computer Science, B.S.

Computer Science, Combined B.S./M.S.

Department Website

The Combined BS/MS in Computer Science (BS) and Computer Science (MS) is a combined bachelor/master degree program that provides students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently.

Students accepted for the BS/MS Program must have a minimum overall undergraduate GPA of 3.2. Students may apply to the BS/MS Program and be offered deferred admission to the graduate program during their junior year.

It is important that students register for the 12 credits of 5000-level classes that are double counted in order to satisfy the electives requirement for the Computer Science major as well as get credit towards the BS/MS Program. Any 5000-level CSI courses that are cross-listed with 4000-level CSI courses, with the approval of the CSE academic programs coordinator, will meet the requirement. If students take the 4000-level courses, those courses cannot be counted for the BS/MS degree.

Students offered deferred admission will remain classified as undergraduates until they have completed all undergraduate degree requirements. At that time, students who have maintained an overall undergraduate GPA 3.2 and have earned a 3.0 or above GPA in the double-counted graduate courses, will be reclassified as a graduate student through the Graduate School.

Specific offerings for each semester may be found in the Schedule of Classes.

To be eligible for the Computer Science, Combined B.S./M.S. option, students must:

1. Have a major GPA of 3.2 or above.
2. Apply for and receive delayed admission in the M.S. program and thereby the double-counting of three graduate classes (12 credits)
3. Maintain a minimum 3.2 cumulative GPA to completion of the degree in Computer Science, B.S.

Information Technology, B.S./Computer Science, M.S., Combined B.S./M.S.

Department Website

The Combined BS/MS in Information Technology (BS) and Computer Science (MS) is a combined bachelor/master degree program that provides students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently.

Students accepted for the BS/MS Program must have a minimum overall undergraduate GPA of 3.2. Students may apply to the BS/MS Program and be offered deferred admission to the graduate program during their junior year.

It is important that students register for the 12 credits of 5000-level classes that are double counted in order to satisfy the electives requirement for the Information Technology major as well as get credit towards the BS/MS Program. Any 5000-level CSI courses that are cross-listed with 4000-level CSI courses, with the approval of the CSE academic programs coordinator, will meet the requirement. If students take the 4000-level courses, those courses cannot be counted for the BS/MS degree.

Students offered deferred admission will remain classified as undergraduates until they have completed all undergraduate degree requirements. At that time, students who have maintained an overall undergraduate GPA 3.2 and have earned a 3.0 or above GPA in the double-counted graduate courses, will be reclassified as a graduate student through the Graduate School.

Specific offerings for each semester may be found in the Schedule of Classes.

To be eligible for the Information Technology/Computer Science, Combined B.S./M.S. option, students must:

1. Have a major GPA of 3.2 or above.
2. Apply for and receive delayed admission in the M.S. program and thereby the double-counting of three graduate classes (12 credits).
3. Maintain a minimum 3.2 cumulative GPA to completion of the degree in Information Technology, B.S.

Information Technology, B.S./Cybersecurity, M.S., Combined B.S./M.S.

Department Website

The Combined BS/MS in Information Technology (BS) and Cyber Security (MS) is a combined bachelor/master degree program that provides students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently.

Students accepted for the BS/MS Program must have a minimum overall undergraduate GPA of 3.2. Students may apply to the BS/MS Program and be offered deferred admission to the graduate program during their junior year.

It is important that students register for the 12 credits of 5000-level classes that are double counted in order to satisfy the electives requirement for the Information Technology major as well as get credit towards the BS/MS Program. Any 5000-level CSI courses that are cross-listed with 4000-level CSI courses, with the approval of the CSE academic programs coordinator, will meet the requirement. If students take the 4000-level courses, those courses cannot be counted for the BS/MS degree.

Students offered deferred admission will remain classified as undergraduates until they have completed all undergraduate degree requirements. At that time, students who have maintained an overall undergraduate GPA 3.2 and have earned a 3.0 or above GPA in the double-counted graduate courses, will be reclassified as a graduate student through the Graduate School.

Specific offerings for each semester may be found in the Schedule of Classes.

To be eligible for the Information Technology/Cybersecurity, Combined B.S. to M.S. option, students must:

1. Have a major GPA of 3.2 or above.
2. Apply for and receive delayed admission in the M.S. program and thereby the double-counting of three graduate classes (12 credits)
3. Maintain a minimum 3.2 cumulative GPA to completion of the degree in Information Technology, B.S.

Information Technology, B.S./Software Engineering and Information Technology, M.S., Combined B.S./M.S.

Department Website

The Combined BS/MS in Information Technology (BS) and Software Engineering and Information Technology (MS) is a combined bachelor/master degree program that provides students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were done independently.

Students accepted for the BS/MS Program must have a minimum overall undergraduate GPA of 3.2. Students may apply to the BS/MS Program and be offered deferred admission to the graduate program during their junior year.

It is important that students register for the 12 credits of 5000-level classes that are double counted in order to satisfy the electives requirement for the Information Technology major as well as get credit towards the BS/MS Program. Any 5000-level CSI courses that are cross-listed with 4000-level CSI courses, with the approval of the CSE academic programs coordinator, will meet the requirement. If students take the 4000-level courses, those courses cannot be counted for the BS/MS degree.

Students offered deferred admission will remain classified as undergraduates until they have completed all undergraduate degree

requirements. At that time, students who have maintained an overall undergraduate GPA 3.2 and have earned a 3.0 or above GPA in the double-counted graduate courses, will be reclassified as a graduate student through the Graduate School.

Specific offerings for each semester may be found in the Schedule of Classes.

To be eligible for the Information Technology/Software Engineering and Information Technology, Combined B.S. to M.S. option, students must:

1. Have a major GPA of 3.2 or above.
2. Apply for and receive delayed admission in the M.S. program and thereby the double-counting of three graduate classes (12 credits)
3. Maintain a minimum 3.2 cumulative GPA to completion of the degree in Information Technology, B.S.

Mechanical Engineering, Combined B.S.E./M.S.

Department Website

The combined Bachelor of Science in Engineering and Masters of Science in Mechanical Engineering program (Combined B.S.E./M.S.) option is designed for highly motivated and qualified students pursuing a Bachelor of Science of Engineering in Mechanical Engineering at Oakland University and wishing to complete a Master of Science of Engineering in Mechanical Engineering directly following the completion of their undergraduate degree requirements.

This program allows students to replace their undergraduate professional elective courses with the following graduate-level courses:

1. One of following theory courses: APM 5441 or ME 5400,
2. Master's Thesis Research: ME 6998 (4 credits), and
3. A 5000-level or above ME course of the student's choosing, which meets both the M.S. and B.S.E. requirements as described in their respective catalogs: Mechanical Engineering, B.S.E. and Mechanical Engineering, M.S.

The above graduate-level courses will count toward both the B.S.E. and the M.S. degree. A critical component of this program is the completion of graduate-level research. This research work begins in the last year of the student's undergraduate studies and culminates in a Master's Thesis.

Specific offerings for each semester may be found in the Schedule of Classes.

To be eligible for the Mechanical Engineering, Combined B.S.E./M.S. option, students must:

1. Have an overall GPA of 3.5 or higher.
2. Apply for and receive delayed admission into the M.S. program after reaching junior standing (90 credit hours or more).
3. Complete the three graduate-level Mechanical Engineering courses with a grade of B or better.
4. Complete a Master's Thesis under the supervision of a Mechanical Engineering Faculty member at Oakland University.

** Students admitted to this accelerated program can graduate with an M.S. degree in five years.*

To apply:

To apply to the Combined B.S.E./M.S. in Mechanical Engineering Program, select the "Combined B.S.E./M.S. program" option in the application for the Mechanical Engineering M.S. degree. Indicate a thesis advisor or a research interest area on the application and upload your approved plan of study, which has been developed with your both your thesis and

academic advisor. After admission to the program has been granted, automatic override to take 5000-level classes will be given.

Non Degree

Artificial Intelligence Minor

Department Website

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Artificial Intelligence

The minor in Artificial Intelligence focuses on the operation, development, and application of intelligent software systems. It consists of five courses as listed in the following.

Required subjects

Take the following two courses

- CSI 1320 - Introduction to Python Programming and Unix **(4)**
- CSI 3620 - Data Structures and Algorithms **(4)**

Primary elective subject

Select one of the following courses

- CSI 4130 - Artificial Intelligence **(4)**
- CSI 4140 - Deep Learning and Applications **(4)**
- CSI 4170 - Machine Learning **(4)**

Additional elective subjects

Select additional two courses from the following

- CSI 4130 - Artificial Intelligence **(4)**
- CSI 4140 - Deep Learning and Applications **(4)**
- CSI 4170 - Machine Learning **(4)**
- CSI 4180 - Natural Language Processing **(4)**
- CSI 4550 - Visual Computing **(4)**
- CSI 4810 - Information Retrieval and Knowledge Discovery **(4)**

Note

At least three of these courses must be taken at Oakland University. A minimum grade of C is required in each course for this minor. Students must obtain permission from the Department of Computer Science and Engineering in order to register for CSI courses at the 3000 and 4000 levels.

Computer Engineering Minor

Department Website

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Computer Engineering

The Minor in Computer Engineering is open to all students who are not majoring in Electrical and/or Computer Engineering. To fulfill the requirements for the Minor in Computer Engineering, a student must complete a minimum of 15 credits. A minimum grade of (C) must be earned for each individual course. At least 12 credits of the minor must be completed at OU. At least 8 credits of courses chosen for the Minor in Computer Engineering must be non-duplicative with coursework in the student's major, concentration, or another minor. Students are required to verify and satisfy prerequisites for each course they select as part of the minor.

Prerequisite

- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)** or CSI 3640 - Computer Organization **(4)**

The Minor in Computer Engineering requires completing four courses. In addition to the required course, two of the four courses must be selected from the Group A list of courses, the final of the four courses can be selected from Group A or Group B.

Required course

- ECE 3720 - Microprocessors **(4)**

Group A - Fundamentals

Computer Hardware

- ECE 2700 - Digital Logic Design **(4)**
- ECE 4710 - Computer Hardware Design **(4)**

Embedded Systems

- ECE 4721 - Embedded Systems Design **(4)**
- ECE 4772 - High Performance Embedded Programming **(4)**

Group B - Electives

- ECE 4415 - Microcomputer-based Control Systems **(4)**
- ECE 4740 - Embedded Artificial Intelligence (AI) **(4)**
- ECE 4780 - Embedded Security **(4)** or a **3000, 4000, or 5000 ECE or CSI course with Department approval**

Computer Science Minor

Department Website

Specific offerings for each semester may be found in the Schedule of Classes.

The minor in computer science is suitable for students with a major in engineering, mathematics, physics, chemistry or biology, who may wish to emphasize numerical, scientific and engineering aspects of computing. Students must earn a minimum of 20 credits, including the following courses:

- **CSI 1320 - Introduction to Python Programming and Unix (4) or CSI 1420 - Introduction to C Programming and Unix (4)**
- **CSI 2300 - Object-Oriented Computing (4)**
- **CSI 2310 - Data Structures (4)**
- **And minimum 8 credits of CSI courses numbered 2000 or above.**

At least 12 of these credits must be taken at Oakland University. A minimum grade of C is required in each course for this minor. Students must obtain permission from the Department of Computer Science and Engineering in order to register for CSI courses at the 3000 and 4000 levels.

Cybersecurity Minor

Department Website

The Cybersecurity minor is designed to complement a wide array of majors, enabling students to pursue their primary interests while acquiring applied knowledge and transferable competencies in secure computing systems. To earn a minor in Cybersecurity, students must complete a minimum of 15 credits by selecting courses from the groups listed below.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the minor in Cybersecurity

Requirements include choosing both courses from Group A, one course from Group B, and at least one additional course from either Group B or Group C.

Group A

- CSI 1420 - Introduction to C Programming and Unix **(4)**
- CSI 2470 - Introduction to Computer Networks **(4)**

Group B

- CSI 4460 - Information Security **(4)**
- CSI 4480 - Information Security Practices **(4)**

Students interested in pursuing an MS degree in Cybersecurity are encouraged to select CSI 4460

Group C

- CSI 3480 - Security and Privacy in Computing **(4)**
- CSI 4560 - Mobile Security **(4)**
- CSI 4600 - Network Security **(4)**
- CSI 4700 - Software Security **(4)**

Additional policies governing the minor

- Students interested in pursuing the minor must submit a completed Minor Authorization Form that identifies the appropriately selected courses to the Minor Faculty Adviser in the Department of Computer Science and Engineering (CSE) for approval.
- A minimum grade of C is required in each course for the minor.
- Students must complete a minimum of six credits of the minor at the 3000 level or above, and at least half of the minor credit requirements must be earned at Oakland University.
- At least 8 credits of courses chosen for the Cybersecurity minor must be non-duplicative with coursework in the student's major, concentration, or another minor.
- Students must fulfill the prerequisites for the courses they select as part of the minor. The minimum 15 credits for the minor requirement do not include prerequisite courses.
- Students must obtain permission from the CSE Department in order to register for CSI designated courses numbered 3000 or higher.

Note

The Cybersecurity minor is available to students from all majors, except for those pursuing a major in Cybersecurity. However, students enrolled in any program offered by the CSE Department are advised to prioritize selecting courses in cybersecurity as part of their professional tracks and electives whenever feasible, rather than pursuing the minor, to efficiently utilize their course credits. Similarly, to optimize credit usage, Computer Science and Information Technology majors interested in cybersecurity are encouraged to choose the specialization in cybersecurity within the programs, rather than opting for a minor in the field.

Data Science Minor

The Data Science minor is designed to complement a wide array of majors, enabling students to pursue their primary interests while acquiring applied knowledge and transferable competencies in extracting insights from complex data. To earn a minor in Data Science, students must complete a minimum of 15 credits by selecting courses from the groups listed below.

Requirements for the minor in Data Science; include choosing both courses from Group A, one course from Group B, and at least one course from Group C

Group A

- CSI 1320 - Introduction to Python Programming and Unix **(4)**
- CSI 2810 - Introduction to Data Science in Python **(4)**

Group B

- CSI 3820 - Data Visualization **(3)**
- CSI 3860 - Contemporary Issues in Data Science **(3)**

Group C

- CSI 3450 - Database Design and Implementation **(4)**
- CSI 3680 - Script Programming **(4)**
- CSI 4450 - Database System I **(4)**
- CSI 4780 - Bioinformatics **(4)**
- CSI 4810 - Information Retrieval and Knowledge Discovery **(4)**
- CSI 4820 - Big Data Analysis with Cloud Computing **(4)**

Additional policies governing the minor

- Students interested in pursuing the minor must submit a completed Minor Authorization Form that identifies the appropriately selected courses to the Minor Faculty Adviser in the Department of Computer Science and Engineering (CSE) for approval.
- A minimum grade of C is required in each course for the minor.
- Students must complete a minimum of six credits of the minor at the 3000 level or above, and at least half of the minor credit requirements must be earned at Oakland University.
- At least 8 credits of courses chosen for the Data Science minor must be non-duplicative with coursework in the student's major, concentration, or another minor.
- Students must fulfill the prerequisites for the courses they select as part of the minor. The minimum 15 credits for the minor requirement do not include prerequisite courses.
- Students must obtain permission from the CSE Department in order to register for CSI designated courses numbered 3000 or higher.

The Data Science minor is available to students from all majors, except for those pursuing a major in Data Science. However, students enrolled in any program offered by the CSE Department are advised to prioritize selecting courses in data science as part of their professional tracks and electives whenever feasible, rather than pursuing the minor, to efficiently utilize their course credits.

Electrical Engineering Minor

Department Website

Specific offerings for each semester may be found in the Schedule of Classes.

Prerequisites

- APM 2555 - Introduction to Differential Equations with Matrix Algebra **(4)**
- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)**

Requirements for the minor in Electrical Engineering

The Minor in Electrical Engineering is open to all students who are not majoring in Electrical and/or Computer Engineering. To fulfill the requirements for the Minor in Electrical Engineering, a student must complete a minimum of 15 credits. A minimum grade of (C) must be earned for each individual course. At least 12 credits of the minor must be completed at OU. At least 8 credits of courses chosen for the Minor in Electrical Engineering must be non-duplicative with coursework in the student's major, concentration, or another minor. Students are required to verify and satisfy prerequisites for each course they select as part of the minor.

Required Courses

- ECE 2005 - Electric Circuits **(4)**
- ECE 3100 - Electronic Circuits and Devices I **(4)**
- ECE 3204 - Signals and Systems **(4)**

Electives

Choose one course

- ECE 3105 - Electronic Circuits and Devices II **(4)**
- ECE 3300 - Electromagnetics I **(4)**
- ECE 3600 - Electrical Machines **(4)**
- ECE 4130 - Microelectronic Materials and Devices **(4)**
- ECE 4134 - Fundamentals of MEMS **(4)**
- ECE 4210 - Communication Systems **(4)**
- ECE 4310 - Antennas **(4)** *
- ECE 4400 - Automatic Control Systems **(4)**
- ECE 4500 - Robotic Systems and Control **(4)**
- ECE 4510 - Machine Vision **(4)**
- ECE 4520 - Automotive Mechatronics I **(4)**
- ECE 4551 - Human Robot Interaction **(4)**
- ECE 4610 - Introduction to Power Electronics **(4)**
- ECE 4620 - Electrical Energy Systems **(4)** *
- Other relevant course with approval of the ECE Department chair or coordinator

*An additional prerequisite course is required for these courses.

Additional Information

The minor's minimum 15 credit requirement applies to transfer students.

Information Technology Minor

The minor in information technology is suitable for students with a major in liberal arts or business, who may wish to emphasize non-numerical and symbolic data processing aspects of computing and information technology.

Specific offerings for each semester may be found in the Schedule of Classes.

For an IT minor, students must earn a minimum of 20 credits in the following courses

- CSI 1200 - Introduction to Computing and Programming using Excel **(4)** **or** CSI 1210 - Problem Solving Using VBA and Excel **(4)**
- CSI 1300 - Introduction to Computer Programming **(4)** **or** CSI 1320 - Introduction to Python Programming and Unix **(4)**

and any three courses from

- CSI 1220 - Computer Animation **(4)**
- CSI 2300 - Object-Oriented Computing **(4)**
- CSI 2470 - Introduction to Computer Networks **(4)**
- CSI 3150 - Web and Mobile Systems **(4)**

At least 12 of these credits must be taken at Oakland University

An average GPA of 2.0 is required in courses counted toward this minor. Students must obtain permission from the Department of Computer Science and Engineering in order to register for CSI courses at the 3000 and higher levels.

International Orientation for Engineering/Computer Science Students Minor

School of Engineering Website

Specific offerings for each semester may be found in the Schedule of Classes.

To obtain a minor in international orientation for engineering/computer science students, students must complete the following courses with an average GPA of 2.0 in each course:

Requirements

- ECN 2000 - Principles of Macroeconomics **(4)** **or** ECN 2020 - Principles of Global Macroeconomics **(4)**
- Foreign language consistent with the introductory course (8)
- One advanced course (4 credits) from PS 3040 **or** ECN 3730
- EGR 4910 **(4)**, which requires eight weeks of study/work abroad

Introductory course – 4 credits

- IS 2100 - Perspectives on China **(4)**
- IS 2200 - Perspectives on Japan **(4)**
- IS 2300 - Perspectives on Africa **(4)**
- IS 2400 - Perspectives on India **(4)**

- IS 2500 - Perspectives on Latin America **(4)**
- IS 2600 - Perspectives on Russia and Eastern Europe **(4)**
- HST 3400 - Europe since 1914 **(4)**

Additional Information

Some of the courses listed above also satisfy general education requirements. This minor is open to the students in the School of Engineering and Computer Science.

Mechanical Engineering Minor

Department Website

The minor in Mechanical Engineering is open to students who are not majoring in mechanical engineering and wish to expand their knowledge in the field of mechanical engineering.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the Minor in Mechanical Engineering

To earn a minor in Mechanical Engineering, students must complete a minimum of 15 credits. At least 11 of these credits must be taken at Oakland University. A minimum grade of C is required in each course for this minor. Students may need to obtain permission from the Department of Mechanical Engineering in order to register for ME courses at the 3000- and 4000- levels. Students are to verify and satisfy pre-requisites for each course they select as part of the minor. At least 8 credits of courses chosen for the Minor in Mechanical Engineering must be non-duplicative with coursework in the student's major, concentration, or another minor.

Pre-requisites (do not count towards minor credits)

- EGR 2500 - Introduction to Thermal Engineering **(4)**
- EGR 2800 - Design and Analysis of Electromechanical Systems **(4)**

Depending on the courses selected by the student, additional math course prerequisites may apply.

Required Courses (11-12 credits): Select three courses

- ME 3200 - Engineering Mechanics **(4)**
- ME 3250 - Mechanics of Materials **(4)**
- ME 3300 - Computer-Aided Design **(3)**
- ME 3500 - Introduction to Fluid and Thermal Energy Transport **(4)**
- ME 3700 - Properties of Materials **(4)**

Elective (4 credits)

Any 3000- or 4000-level ME course(s) not used to satisfy the required courses.

Sustainability Engineering Minor

Department Website

The minor in Sustainability Engineering is designed for engineering students who wish to emphasize sustainability principles and practices.

Specific offerings for each semester may be found in the Schedule of Classes.

Admission Requirements

Admission to the Minor in Sustainability Engineering program is open to SECS students with Major Standing. Students must also satisfy any prerequisites for their selected courses.

Requirements for the minor in Sustainability Engineering

To fulfill the requirements for the Minor in Sustainability Engineering, a student must complete 16 credits described below. A minimum grade of (C) must be earned for each individual course. Students are required to verify and satisfy pre-requisites for each course they select as part of the minor. Students may need to obtain permission from the appropriate department in order to register for engineering courses at the 3000- and 4000- levels. At least 8 credits of courses chosen for the Minor in Sustainability Engineering must be non-duplicative with coursework in the student's major, concentration, or another minor.

Fundamentals (4 credits)

Complete 4 credits from the following courses

- ECE 4620 - Electrical Energy Systems **(4)**
- **ISE 4490 - Industrial Sustainability (4)**
- ME 4530 - Renewable Energy **(4)**

Capstone (4 credits)

Complete 4 credits from the following course

- ME 4590 - Energy and Sustainability Engineering Seminar and Practice **(4)**

Electives (8 credits)

Complete 8 credits from the list below, including up to 4 credits of engineering electives and at least 4 credits of non-engineering electives.

Engineering Electives (up to 4 credits) (must be different from credits counted as a Fundamentals course)

ECE Courses

- ECE 2005 - Electric Circuits **(4)**

- ECE 3600 - Electrical Machines **(4)**
- ECE 4605 - Electromechanical Energy Conversion II **(4)**
- ECE 4610 - Introduction to Power Electronics **(4)**
- ECE 4620 - Electrical Energy Systems **(4)**
- ECE 4630 - Electric and Hybrid Drive Systems **(4)**
- ECE 4900 - Special Topics **(4) with approval**
- ECE 4996 - Independent Study **(1 TO 4) with approval**

ISE Courses

- ISE 3318 - Engineering Statistics and Economic Analysis **(4)**
- ISE 3330 - Engineering Operations Research **(3)**
- ISE 4410 - Supply Chain Modeling and Analysis **(4)**
- ISE 4434 - Metamodeling and Optimization Methods in Design **(4)**
- ISE 4435 - Data Analytics **(4)**
- ISE 4450 - Fundamentals of Energy Management **(4)**
- ISE 4485 - Statistical Quality Analysis **(4)**
- **ISE 4490 - Industrial Sustainability (4)**

ME Courses

- ME 3500 - Introduction to Fluid and Thermal Energy Transport **(4)**
- ME 4434 - Metamodeling and Optimization Methods in Design **(4)**
- ME 4510 - Intermediate Fluid Mechanics **(4)**
- ME 4520 - Intermediate Heat Transfer **(4)**
- ME 4525 - Fuel Cell Science and Technology **(4)**
- ME 4530 - Renewable Energy **(4)**
- ME 4535 - Introduction to Electric Drive Vehicle Engineering **(4)**
- ME 4540 - Internal Combustion Engines I **(4)**
- ME 4550 - Fluid and Thermal Systems Design **(4)**
- ME 4570 - Sustainable Design for the Built Environment **(4)**
- ME 4900 - Special Topics **(2 TO 4) with approval**
- ME 4995 - Directed Research **(4) with approval**
- ME 4996 - Independent Study **(1 TO 4) with approval**

Non-Engineering Electives (at least 4 credits)

Environmental Law and Policy

- AN 3720 - Human Adaptation to Change in Climate **(4)**
- ENV 3120 - Energy and the Environment **(4)**
- ENV 3540 - Global Environmental Governance **(4)**
- ENV 4610 - Environmental Law and Policies **(3)**
- PS 3710 - International Politics of Human Rights **(4)**

Sustainable Business Practice

- ECN 3100 - Economics of Energy and the Environment (3)

Natural Sciences and Ecology

- BIO 4330 - Ecology of Streams and Rivers (4)
- CHM 4100 - Environmental Chemistry (3)
- CHM 4130 - Environmental Aquatic Chemistry (3)
- ENV 3730 - Water Resources (3)
- PHY 3720 - Nuclear Physics (4)

Other

- Other 3000-level or greater non-SECS courses (with approval)

Actuarial Science

Website

Because an actuary needs a blend of mathematics, economics, statistics, and finance, this major is offered jointly by the Department of Economics and the Department of Mathematics and Statistics through the College of Arts and Sciences. See the Actuarial Science, B.S., Economics (Economics) section in the College of Arts and Sciences portion of the catalog.

Interdisciplinary Studies, BIS

Website

The Bachelor of Interdisciplinary Studies (BIS) degree is primarily intended for students wishing to create an innovative program of study that meets their individual goals and integrates coursework from across the university. Students may select courses from any academic department, subject to prerequisites and policies set by the individual departments. Students plan a unique and challenging academic program in cooperation with an Interdisciplinary Studies faculty mentor and academic adviser.

Admission Criteria

Students applying to the Interdisciplinary Studies program are first admitted to Pre-Interdisciplinary Studies status. Students will be granted major standing upon approval of their Plan of Study and Rationale by the Interdisciplinary Studies Faculty Admissions Committee. Only with major standing can students begin taking proposed courses on their Plan of Study. Academic Advising is integral for completion of the BIS degree.

Students changing their major to BIS must meet the program requirements described in the catalog at the time of the change, or those described in a subsequent catalog. Catalog requirements must not be more than six years old at the time of graduation. BIS cannot be used for a double major but can be pursued as a dual degree or a post bachelor's degree program.

Associate degree holders can transfer up to 88 semester credits from accredited institutions.

Schedule of Classes

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the Bachelor of Interdisciplinary Studies degree

After achieving major standing, BIS requirements include the following:

1. Successfully complete at least 28 credits with a minimum grade of C in each course from an approved Plan of Study at Oakland University
2. Complete all General Education Requirements.
3. Complete a minimum of 120 semester credits.
4. Complete 32 credits at the 3000 or 4000 levels.
5. Complete 32 credits at Oakland University.
6. Complete BIS 3000 - Introduction to Interdisciplinary Studies and BIS 4930 - Interdisciplinary Research.

BIS - Wayne Law and Detroit Mercy Law Agreements

This 3 + 3 arrangement allows students with BIS major standing to complete their undergraduate degrees with three years of study at OU and one year at Wayne State University Law School or Detroit Mercy Law School. Both Law Schools require a minimum of 75 undergraduate credits for admission and a 3.4 (Wayne) or 3.5 (UDM) minimum grade point average based on their first 60 credits. Holistic acceptance relies heavily on LSAT scores and undergraduate grade point averages. Once admitted and the first year of law school is successfully completed, students transfer their Law school courses (30 credits) back to OU towards the fulfillment of their BIS degree requirements. To finish the BIS degree, students need to successfully complete the BIS introduction and capstone courses at Oakland University, BIS 3000 - Introduction to Interdisciplinary Studies and BIS 4930 - Interdisciplinary Research.

Transfer friendly program

The Interdisciplinary Studies program allows students to combine courses from the university curriculum with associate degrees from Michigan community colleges or university credits from 4- year institutions. The three-plus-one program provides for transfer of up to 88 semester credits from accredited institutions. It is suggested that students transferring from community colleges complete all general education requirements through the Michigan Transfer Agreement (MTA) as part of their 88-credit program. Students with associate degrees in any area may qualify for maximum transfer credits. Students transferring from 4- year institutions should speak with an adviser regarding general education requirements.

For students to maximize transfer credits, courses accepted must have a grade of (C-) or above and taken at accredited institutions. Certain developmental courses may be subject to individual evaluation. For additional information, see Transfer Information.

Fast Track

Fast Track programs are geared toward adult learners, but open to any student, with the goal of maintaining full time student status while taking courses that are accelerated, and fully online. This method allows students to remain scholarship and financial aid eligibility.

Leadership Track (with Human Resource Development minor): created for those interested in growing their leadership capabilities for application in the community, businesses, and other organizations with an interest in human resource development.

Concentrations or minors

BIS students may wish to develop programs that include concentrations or minors offered by other academic schools or departments within the university. Approximately 65 minors and concentrations are available to Interdisciplinary Studies students; a complete listing is available in the undergraduate catalog Program list under, "Non degree."

Students should consult with an Interdisciplinary Studies adviser to determine policies and procedures on seeking minors or concentrations.

Conciliar honors

Conciliar honors are awarded to qualified Interdisciplinary Studies students. Students who have a cumulative grade-point average of a 3.60 or better automatically receive conciliar honors. Students may be nominated for honors if they have a cumulative grade-point average between 3.30 and 3.59; students may nominate themselves or be nominated by a faculty mentor or professional advisor. Consideration is given for excellence in scholarship, community and university experience and overcoming considerable adversity.

List of Courses

- BIS 3000 - Introduction to Interdisciplinary Studies
- BIS 4930 - Interdisciplinary Research

Combined Bachelor/Masters

Interdisciplinary Studies, B.I.S./Clinical Mental Health Counseling, M.A., Combined B.I.S./M.A. (Pending Approvals)

Department Website

The Combined Interdisciplinary Studies, B.I.S./Clinical Mental Health Counseling, M.A., is a program that provides high-achieving students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were completed independently. Students in this program complete 12 graduate level credits at undergraduate tuition rates. Students who have a minimum overall undergraduate GPA of 3.2 and have earned a 3.0 or above GPA in each of the 12-credits of graduate courses will be reclassified as a graduate student through the Graduate School.

Requirements for the Interdisciplinary Studies, B.I.S./Clinical Mental Health Counseling M.A., Combined B.I.S./M.A.

1. Meet the university general education requirements:

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity and Capstone. For details, refer to the General Education Requirements section of the catalog.

2. Have an approved plan of study in the Interdisciplinary Studies, B.I.S. program that indicates pursuit of the combined degree program.

Eligible students will be able to substitute up to 12 credits of the following counseling courses into their Interdisciplinary Studies Program of Study:

- CNS 5050 - Introduction to Counseling and Ethics (4 credits)
- CNS 5060 - Diversity and Social Justice Issues (4 credits)
- CNS 5080 - Theories of Counseling and Psychotherapy (4 credits)
- CNS 5090 - Individual and Family Development (4 credits)
- CNS 6010 - Testing and Assessment in Counseling (4 credits)

3. Apply for and receive delayed admission to the Clinical Mental Health Counseling, M.A. program

Applicants must submit all Graduate Application Requirements and the departmental requirement of two essays by the published application deadlines.

Interdisciplinary Studies, B.I.S./Counseling, M.A., Combined B.I.S./M.A. (Pending Approvals)

Department Website

The Combined Bachelor of Interdisciplinary Studies, B.I.S./Counseling, M.A. is a program that provides high-achieving students an opportunity to complete a bachelor's and master's degree in less time than would be required if the two degrees were completed independently. Students in this program complete 12 graduate level credits at undergraduate tuition rates. Students who have a minimum overall undergraduate GPA of 3.2 and have earned a 3.0 or above GPA in each of the 12-credits of graduate courses will be reclassified as a graduate student through the Graduate School.

Requirements for the Interdisciplinary Studies, B.I.S./Counseling, M.A., Combined B.I.S./M.A.

1. Meet the university general education requirements:

In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses.

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity and Capstone. For details, refer to the General Education Requirements section of the catalog.

2. Have an approved plan of study in the Interdisciplinary Studies, B.I.S., program that indicates pursuit of the combined degree program.

Eligible students will be able to substitute up to 12 credits of the following counseling courses into their Interdisciplinary Studies Program of Study:

- CNS 5050 - Introduction to Counseling and Ethics (4 credits)
- CNS 5060 - Diversity and Social Justice Issues (4 credits)
- CNS 5080 - Theories of Counseling and Psychotherapy (4 credits)
- CNS 5090 - Individual and Family Development (4 credits)
- CNS 6010 - Testing and Assessment in Counseling (4 credits)

3. Apply for and receive delayed admission to the Counseling, M.A. program.

Applicants must submit all Graduate Application Requirements and the departmental requirement of two essays by the published application deadlines.

School of Nursing

School of Nursing Website

The SON offers programs of study leading to the Bachelor of Science in Nursing (BSN) degree, Master of Science in Nursing (MSN) degree, Doctor of Nursing Practice (DNP) degree, and Doctor of Philosophy in Nursing (PhD) degree. Graduates of the undergraduate program pre-licensure tracks (Basic-BSN and Accelerated Second-Degree BSN) are eligible to take the NCLEX-RN licensure examination. The following are the BSN tracks available at Oakland University.

- Direct Admission Criteria
- BSN Basic (Pre-Licensure)
- BSN Accelerated Second-Degree (Pre-Licensure)
- BSN Degree Completion Sequence (RN-BSN, Post-Licensure)

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program, and post-graduate APRN certificate programs at Oakland University is accredited by the Commission on Collegiate Nursing Education, 655 K Street NW, Suite 750, Washington, DC 20001, 202-887-6791.

Admission to the SON Undergraduate Program

All students pursuing admission to the SON undergraduate program must first gain admission to Oakland University. For additional information on Basic-BSN and ASD Competitive Admission Requirements for specific degree tracks, please see the Basic-BSN, the Accelerated-Second Degree, and the BSN Degree Completion Sequence sections below.

SON BSN Admission for Basic-BSN and Accelerated Second-Degree (ASD) Tracks

For more information about our prelicensure tracks please view the links below.

Basic-BSN track (pre-licensure) - School of Nursing - Oakland University

Accelerated Second-Degree BSN track (pre-licensure) - School of Nursing - Oakland University

Completion of the admission requirements does not guarantee an offer of admission to the SON Basic-BSN or ASD tracks. ASD applicants must also have a posted bachelor's degree from an accredited institution of higher learning prior to gaining admission to Oakland University as a second-degree student.

Students may apply for conditional admission. Prospective students who are enrolled in their final semester of prerequisite coursework, but will not be finished by the application deadline, may apply for conditional admission, provided that their final prerequisite courses will be completed and official transcripts received prior to their program start date. Offers of conditional admission are space-contingent and admission preference is given to applicants who have completed all of the prerequisite coursework by the application deadline.

Any applicant who has been dismissed from a nursing program or has ever received two or more nursing course grades below a B- must first obtain approval from the SON to apply to the Basic-BSN and/or ASD tracks.

Bachelor of Science in Nursing

BSN Accelerated Second-Degree (Pre-Licensure)

Website

Students admitted to the SON undergraduate program should consult the SON Undergraduate Program Student Handbook for information regarding program policies and procedures.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the Bachelor of Science in Nursing - BSN Degree: ASD Track

Students must satisfy the following:

1. Complete all academic requirements identified in the SON plan of study. Second-degree students from regionally accredited institutions are exempt from Oakland University's general education requirements. This does not apply to students educated outside the U.S. Please work with your academic advisor to determine requirements for General Education Requirements courses.
2. Complete at least 32 credits at or above the 3000-level.

Semester 1 (18 credits)

- BIO 3520 - Introduction to Human Microbiology (4) or CDS 3300 - Microbiology of Infectious Diseases(3) and CDS 3310 - Microbiology of Infectious Diseases Laboratory(1) **(The School of Nursing reserves the right to apply credits from OU and/or courses taken at other institutions to meet this requirement)**
- NRS 2010 - Pathophysiology (3)
- NRS 2012 - Introduction to Professional Nursing (3)
- NRS 2014 - Health Assessment (4)
- PSY 2250 - Introduction to Life-Span Developmental Psychology (4) **(The School of Nursing reserves the right to apply credits from OU and/or courses taken at other institutions to meet this requirement)**

Semester 2 (17 credits)

- NRS 2020 - Pharmacology (4)
- NRS 2024 - Fundamentals of Professional Nursing Practice (5)
- NRS 3012 - Research for Evidence-Based Nursing Practice (3)
- NRS 3015 - Nursing Care of Adults I (5)

Semester 3 (17 credits)

- NRS 3022 - Informatics for Nursing Practice (2)
- NRS 3016 - Nursing Care of Individuals with Behavioral and Mental Health Disorders (5)
- NRS 3025 - Nursing Care of Adults II (5)
- NRS 3026 - Nursing Care of the Childbearing Family (5)

Semester 4 (17 credits)

- NRS 4012 - Nursing Leadership (2)
- NRS 4015 - Nursing Care of Communities and Populations (5)
- NRS 4016 - Nursing Care of the Childrearing Family (5)
- NRS 4026 - Nursing Capstone (0 OR 5)
- NRS 4031 - NCLEX Success Strategies (1)

69 Total Credits

BSN Basic (Pre-Licensure)

Website

Students admitted to the SON undergraduate program should consult the SON Undergraduate Program Student Handbook for information regarding program policies and procedures.

Specific offerings for each semester may be found in the Schedule of Classes.

Requirements for the Bachelor of Science in Nursing - BSN Degree: Basic Track (Pre-Licensure)

Students must complete 125 credits and satisfy the following:

1. Complete all academic requirements identified in the SON plan of study.
2. Satisfy the general education requirements. In order to graduate on-schedule without taking additional courses, it is highly recommended that students meet with an Undergraduate Academic Adviser concerning the selection of all of their general education courses. Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundation, Exploration, Integration, Writing, U.S. Diversity, and Capstone. For details, refer to the General Education Requirements section of the catalog.
3. Complete at least 32 credits at or above the 3000-level.

Pre-nursing Semester 1 (16 credits)

- BIO 1200 - Biology I (4)
- CHM 1040 - Introduction to Chemical Principles (4)
- PSY 1000 - Introduction to Psychology (4)
- WRT 1050 - Composition I (4)

Pre-nursing Semester 2 (17 credits)

- BIO 2006 - Clinical Anatomy and Physiology (5)
- CHM 2010 - Introduction to Organic and Biological Chemistry (4)
- WRT 1060 - Composition II (4)
- **(Select one) PHL 1000, PHL 1070, PHL 1100, PHL 1300, PHL 2200, PHL 2210, PHL 2220 (4)**

Nursing Year 1

Semester 1 (14 credits)

- BIO 3520 - Introduction to Human Microbiology (4) **or** CDS 3300 - **Microbiology of Infectious Diseases (3) and CDS 3310 - Microbiology of Infectious Diseases Laboratory (1)**
- NRS 2010 - Pathophysiology (3)
- NRS 2012 - Introduction to Professional Nursing (3)
- NRS 2014 - Health Assessment (0 OR 4)

Semester 2 (17 credits)

- NRS 2020 - Pharmacology (4)
- NRS 2024 - Fundamentals of Professional Nursing Practice (5)
- PSY 2250 - Introduction to Life-Span Developmental Psychology (4)
- **General Education course (4)**

Nursing Year 2

Semester 1 (17 credits)

- NRS 3012 - Research for Evidence-Based Nursing Practice (3)
- NRS 3015 - Nursing Care of Adults I (5)
- NRS 3016 - Nursing Care of Individuals with Behavioral and Mental Health Disorders (5)
- **General Education course (4)**

Semester 2 (16 credits)

- NRS 3022 - Informatics for Nursing Practice (2)
- NRS 3025 - Nursing Care of Adults II (5)
- NRS 3026 - Nursing Care of the Childbearing Family (5)
- **General Education course (4)**

Nursing Year 3

Semester 1 (16 credits)

- NRS 4012 - Nursing Leadership (2)
- NRS 4015 - Nursing Care of Communities and Populations (5)
- NRS 4016 - Nursing Care of the Childrearing Family (5)
- **General Education course (4)**

Semester 2 (12 credits)

- NRS 4026 - Nursing Capstone (**0 OR 5**)
- NRS 4031 - NCLEX Success Strategies (**1**)
- **NRS XXXX - Nursing Elective (3)**
- **General Education course (4)**

125 Total Credits

Note

Writing Intensive in General Education: Recommend Global Perspectives that also meets Writing Intensive in General Education.

General Education: Students choose one approved course from each of the following categories: Arts; Foreign Language and Culture; Formal Reasoning; Global Perspective; Literature; Natural Science and Technology; Social Science; Western Civilization; Writing Intensive in the General Education. Students are encouraged to consult with an academic adviser for assistance selecting and scheduling general education courses and in particular the course selected to fulfill the Writing Intensive in the General Education within their academic schedule. In many instances, you may select one course to fulfill more than one degree requirement.

BSN Degree Completion Sequence (RN-BSN, Post-Licensure)

Website

Specific offerings for each semester may be found in the Schedule of Classes.

Oakland University's online RN to BSN equips you to take your career to the next level. Designed for registered nurses, our RN to BSN program combines academic rigor with online convenience. You can complete the 32-credit RN to BSN program in as little as 12 months, while deepening your knowledge of patient-centered care, evidence-based practice, information technology, and culturally competent care.

The School of Nursing offers an RN-BSN track for registered nurses with an Associate's Degree in Nursing (ADN) and who possess a valid and unrestricted RN license. A cumulative GPA of 2.5 or higher from the student's ADN program is required for unconditional admission to the RN-BSN track. Students seeking admission to the RN-BSN track must first apply to Oakland University through the OU Office of Undergraduate Admissions. The School of Nursing will verify the applicant's unrestricted RN license. Students admitted to the RN-BSN track will be required to meet all Oakland University general education requirements and should seek guidance regarding transcript evaluation and obtaining the Michigan Transfer Agreement (MTA) through the School of Nursing Academic Advising office.

Applicants who have been dismissed from a BSN completion program or who have ever received two (or more) grades in nursing courses below B- must obtain SON permission to apply to the BSN Degree Completion Sequence (RN-BSN Track). For more information, contact SON Academic Advising.

Requirements for the Bachelor of Science in Nursing - BSN Degree: BSN Degree Completion Sequence (RN-BSN) Track for Registered Nurses

Students must complete all academic requirements identified in the SON plan of study.

Full-Time

Semester 1 (14 credits)

- NRS 3511 - Transition to Baccalaureate Nursing Education **(4)**
- NRS 4551 - Population Health **(4)**
- NRS 3022 - Informatics for Nursing Practice **(2)**
- NRS 4561 - Community and Global Health **(4)**

Semester 2 (14 credits)

- NRS 3071 - Research Basis of Nursing Practice **(4)**
- NRS 3541 - Nursing Leadership and Health Care Issues **(3)**
- NRS 4571 - Contemporary Nursing: Professional and Ethical Issues **(4)**
- **NRS XXXX - Nursing Elective (3)**

Semester 3 (4 credits)

- NRS 4585 - Nursing Capstone Experience **(4)**

Part-Time

Semester 1 (6 credits)

- NRS 3511 - Transition to Baccalaureate Nursing Education **(4)**
- NRS 3022 - Informatics for Nursing Practice **(2)**

Semester 2 (7 credits)

- NRS 3071 - Research Basis of Nursing Practice **(4)**
- **NRS XXXX - Nursing Elective (3)**

Semester 3 (8 credits)

- NRS 4551 - Population Health **(4)**
- NRS 4561 - Community and Global Health **(4)**

Semester 4 (7 credits)

- NRS 3541 - Nursing Leadership and Health Care Issues **(3)**
- NRS 4571 - Contemporary Nursing: Professional and Ethical Issues **(4)**

Semester 5 (4 credits)

- NRS 4585 - Nursing Capstone Experience **(4)**

32 Total Nursing Credits

University Transfer policy

Students admitted to OU SON from a regionally accredited Associate's Degree in Nursing Program (ADN), may transfer a maximum of 63 credits as established by the university transfer policy. Students transferring in without the completion of the Michigan Transfer Agreement, please reference the general education transfer guide for courses that satisfy individual categories.

Additional 30 Prior Learning credits

Oakland University awards an additional 30 prior learning credits awarded for successful completion of the NCLEX-RN.

The Honors College

Website

The Honors College was established to provide highly motivated students an intellectually stimulating community, as well as exceptional opportunities for leadership and involvement. The curriculum offers a distinctive undergraduate experience that integrates the sciences, the professional fields and the arts through research, colloquia, creative activities, scholarly and extra-curricular activities, as well as collaboration within the university and larger community. It offers specially designed general education requirements, and a personalized Honors plan of study. Students applying admitted to The Honors College must first be admitted to or enrolled at Oakland University. Courses with the HC prefix are open only to students who have been accepted into The Honors College.

Departmental majors

Each student must complete a departmental major in the College of Arts and Sciences or a prescribed course of study in the School of Business Administration, the School of Education and Human Services, the School of Engineering and Computer Science, the School of Health Sciences, the School of Nursing or the Bachelor of Integrative Studies.

General education requirements of The Honors College and a Personalized Honors Plan of Study

The Honors College offers selected core general education courses, from this catalog, as designed for student needs or determined by proposals submitted by faculty and accepted by an Honors College committee. Specific offerings for each semester may be found on SAIL and on The Honors College website. Specific requirements for graduation of The Honors College will be confirmed by an Honors College Academic Adviser by way of a Personalized Honors Plan of Study.

1. The student must successfully complete HC 1000 and at typically two Honors College core courses, based on the personalized Honors Plan of Study.

- HC 1000 - First Year Colloquium
- HC 2010 - Art
- HC 2020 - Literature
- HC 2040 - Western Civilization
- HC 2050 - International Studies
- HC 2060 - Social Science
- HC 2070 - Math/Logic or Computer Science
- HC 2080 - Natural Science and Technology
- HC 4900 - Independent Study

2. Honors College Aspire or Presidential Aspire. Aspire is a zero credit course that tracks HC involvement and is reflected on the students' transcript. The Honors Personalized Plan will confirm the number of courses in this area.

3. The student must successfully complete at least one approved General Education course in each of the 10 knowledge areas that are not covered by the HC core courses taken.

4. The student must complete an approved writing intensive course in General Education Requirements, (which may be satisfied by choosing an HC 2020), a writing intensive course in the major, a diversity course and a capstone. These four requirements may be met by courses that double-count in other general education areas or in the major.

5. The student must complete a foreign language requirement as determined in consultation with an Honors Academic Adviser in the personalized Honors Plan of Study.

6. The student must successfully complete HC 3900.

7. The student must complete a senior thesis.

Note: Honors College requirements partially replace university general education requirements and replace Exploratory requirements for students in the College of Arts and Sciences.

The Honors College Involvement

- 10 hours per year of involvement outside of the classroom
- One HC event per year which may count toward involvement hours
- Meet with an HC advisor at least once each academic year for creation of a personalized Honors College plan of study

Academic Advisement

The student must maintain yearly requirements in the Honors College. Academic Advisement Guidelines are available from Honors College Academic Advisers and in the Honors College Student Information Google Site.

Honors thesis

Each Honors College student will successfully complete a major scholarly work or creative project under the guidance and supervision of a faculty mentor. The Honors College Thesis can be awarded as Thesis (Pass), Thesis (with Distinction) or Thesis (with Distinction and a Thesis Award in a particular field). The Honors College thesis/project provides a unique opportunity to work at length on a project designed to contribute to the student's field of expertise and enhance their level of research or creative practice experience. Students complete individual theses, but can choose to work individually or in a team.

A minimum grade-point average of 3.50 is required for graduation with Honors College designation. The diploma indicates that the student is a graduate of The Honors College.

General Education Requirements

Foundations Area

Writing Foundations

Formal Reasoning

Explorations Area

Arts

Global Perspective

Language and Culture

Literature

Natural Science and Technology

Social Science

Western Civilization

Integration Area

Writing Intensive in General Education

Writing Intensive in the Major

Knowledge Applications

Capstone

U.S. Diversity

The General Education Program

Students who graduate from Oakland University have demonstrated success in two programs of study: Their major degree program and OU's innovative General Education program. Alongside the in-depth study for professional success, the General Education program provides students opportunities to cultivate the skills valued by employers and essential to successful engagement as citizens and members of local and global communities.

The core skills of critical thinking, effective communication, information literacy, and social awareness shape all of the courses offered in our General Education program. Because they

are essential to our students' educational and future success, these core skills are recognized as **University Learning Outcomes**.

- **Critical thinkers** are capable of comprehensively exploring issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion. They analyze, evaluate, and synthesize relevant information, alternative points of view, inferences, and/or assumptions, in order to arrive at substantiated conclusions.
- **Effective communicators** analyze rhetorical situations, adapt their discourse to diverse genres and media, treat their sources and source material ethically, and meet the expectations of a variety of discourse communities in the academy and beyond. They convey ideas, arguments, or analyses clearly and cogently in oral, written, or visual form, and they apply effective communication skills as appropriate to the context and intended audiences.
- OU graduates are **information literate** citizens who reflectively find and evaluate information, understand how that information is produced and valued, and use information responsibly and ethically to create new knowledge and participate as lifelong learners in society. They effectively integrate relevant information sources to build new, or add to existing, public or professional understandings.
- **Socially aware** citizens demonstrate their intercultural competence and consider the ethical implications of their words, actions, and engagement with or indifference to other communities. They apply principles, methods, value systems, or ethics to social issues confronting local and global communities.

Create Your Own Program of Study

OU's general education program permits students to design their own program of study, choosing from an impressive array of course offerings. Some of the general education requirements aim to complement the student's major or minor; others help students venture beyond the confines of their discipline to explore ideas, methods, and skills in other disciplines.

Students should meet regularly with their advisors to develop a plan of study that meets their interests, goals, and aspirations and satisfies the graduation requirements.

The program of study in general education at OU consists of courses in three areas: Foundations, Explorations, and Integration.

1. Writing Foundations (WRT 1060 - Composition II) and Formal Reasoning constitute the FOUNDATIONS area of General Education. These courses help students develop the processes, skills, and knowledge essential for success in their studies.
2. Approved courses in the EXPLORATIONS area provide the fundamental abilities that a well-educated person should have, including a critical appreciation of the ways we gain and create knowledge and an understanding of the universe, of society, and of humankind. In their General Education studies at OU, students may choose from a variety of courses in the areas of the Arts, Language and Culture, Literature, Global Perspective, Natural Science and Technology, Social Science and Western Civilization. In their advanced years in the general education program, students are given an opportunity to integrate and apply the knowledge and skills they have already developed through Knowledge Applications and Capstone courses.
3. The INTEGRATION area helps students synthesize what they have learned in both the general education program and in their major, to identify and make use of the connections among the various disciplines and to apply their knowledge to addressing real world problems. This integrated knowledge forms the basis for students' lifelong learning, preparing them for successful careers and for productive personal and civic lives.

Oakland University's general education program also helps students develop advanced writing skills and engages students in a study of U.S. Diversity.

1. Through two WRITING INTENSIVE courses, students gain a depth in both general and discipline-specific writing skills. Writing Intensive in General Education and Writing Intensive in the Major courses may also satisfy other areas within the General Education program.
2. Because Oakland University is committed to ensuring that students develop an understanding of, and appreciation for, the history, advantages and challenges of the diversity of the United States, the general education program offers a range of courses that fulfill the U.S. DIVERSITY area, including courses in art history, anthropology, cinema, communication, dance, economics, literature, history, music, nursing, political [LG1] science, theatre, and writing and rhetoric. U.S. diversity courses may also satisfy other areas within the general education program.

General Education Requirements

Each candidate for an Oakland University baccalaureate will need to satisfactorily complete approved courses in each of the following areas: Foundations, Explorations, Integration, Writing, and U.S. Diversity.

1. Foundations Area

At least one course of at least three credits from the list of approved courses in each of the following areas:

- **Writing Foundations (WRT 1060 - Composition II)**
- Formal Reasoning

Notes

For alternative ways of meeting the Writing Foundations requirement, see the Academic Policies and Procedures section of the catalog.

Students must earn at least a C in WRT 1060 to meet the Writing Foundations requirement.

Students must satisfactorily complete an approved Formal Reasoning course prior to their junior standing.

2. Explorations Areas

At least one course of at least three credits from the list of approved courses in each of the following seven areas:

- Arts
- Global Perspective
- Language and Culture
- Literature
- Natural Science and Technology
- Social Science
- Western Civilization

Notes

Language and Culture courses do not satisfy the Global Perspective area.

Students may meet the Language and Culture requirement through the satisfactory completion of a course having a prerequisite of an 1140 language course, or an American Sign Language course having COM 1500 as a prerequisite. The course can not be used to satisfy any other general education area requirement.

For international undergraduate students whose native language is not English, the Language and Culture requirement may be waived when the student record includes one of the following:

- A TOEFL, MELAB, IELTS or Duolingo English Test score that satisfies the admissions criteria
- ESL courses from another regionally accredited institution
- A transcript indicating graduation from a high school instructed in a language other than English

3. Integration Area

At least one course of at least three credits from the list of approved courses in each of the following areas:

- Knowledge Applications
- Capstone

Notes

Knowledge Applications courses must be outside the rubric of the student's major.

Students must complete the Capstone requirement at Oakland University.

• Two courses from the Writing Intensive Area

At least one course of at least three credits from the list of approved courses in each of the following areas:

- Writing Intensive in the Major
- Writing Intensive in General Education

Notes

Writing Intensive in the Major and Writing Intensive in General Education courses may also satisfy other areas within the general education program.

Writing Intensive requirements cannot be met with WRT 1050 or WRT 1060.

Students must have earned a grade of C in the Writing Foundations course to enroll in a Writing Intensive course.

Students must complete the Writing intensive in the Major requirement at Oakland University.

Students may not apply non-classroom experience (course competency, Advanced Placement, International Baccalaureate, and/or CLEP credits) to satisfy general education requirements for Writing Intensive courses.

Criteria for WIM and WIG courses can be accessed [here](#).

• One course of at least three credits from the U.S. Diversity Area

Note

U.S. Diversity may be fulfilled through courses that also satisfy the Explorations areas.

Notes

Students using this catalog to meet general education requirements may also use any course subsequently approved by the General Education Committee and published in a later catalog to satisfy requirements in a particular area. If a course listed below is removed from lists of approved courses in later catalogs, it may still be used to meet a general education requirement by students following the current catalog until the catalog expires (six years).

Transfer students should refer to the course catalog section, Transfer Student Information.

Some of the approved courses below may not be offered every semester. Students should check with their advisers to ensure that their preferred courses will be offered.

Note that courses in these knowledge areas may not double count with each other: Writing Foundations, Formal Reasoning, Arts, Language and Culture, Global Perspective, Literature, Natural Science and Technology, Social Science, Western Civilization, and Knowledge Applications. Additional general education requirements include U.S. Diversity, Writing Intensive in General Education, Writing Intensive in the Major, and a Capstone, all of which may be met by double counting approved general education courses. It is possible for a course to be triple counted if, in addition to meeting the requirements for Explorations, Knowledge Applications or Capstone, it also meets the requirements for U.S. Diversity and Writing Intensive in General Education or Writing Intensive in the major.

General Education Course Listing

General Education Courses:

Foundations Area

Writing Foundations

The Writing Foundations area prepares students to demonstrate:

- *knowledge of the elements, writing processes and organizing strategies for creating analytical and expository prose*
- *effective rhetorical strategies appropriate to the topic, audience, context and purpose*

Notes

For alternative ways of meeting the Writing Foundations requirement, see the Academic Policies and Procedures section of the catalog.

Students must earn at least a C in WRT 1060 to meet the Writing Foundations requirement.

* WRT 1060 - Composition II

Formal Reasoning

The formal reasoning area prepares students to demonstrate:

- *knowledge of one or more formal reasoning systems such as computer programming, mathematics, statistics, linguistics or logic*
- *application of formal reasoning to read, understand, model and solve problems across a variety of applications*

Note

Students must satisfactorily complete an approved Formal Reasoning course prior to their junior standing.

- CSI 1200 - Introduction to Computing and Programming using Excel (4)
- CSI 1220 - Computer Animation (4)

- CSI 1300 - Introduction to Computer Programming (4)
- EHS 2550 - Basic Statistics for Health Sciences (3)
- LIN 1180 - Linguistic Analysis (4)
- MTE 2111 - Mathematics for Elementary Education II (4)
- MTH 1118 - Mathematical Sciences in the Modern World (4)
- MTH 1221 - Linear Programming Elementary Functions (4)
- MTH 1222 - Calculus for the Social Sciences (4)
- MTH 1554 - Calculus I (4)
- PHL 1000 - Introduction to Logic (4)
- PHL 1070 - Introduction to Symbolic Logic (4)
- PS 3080 - Systematic Political Analysis (4)
- QMM 2400 - Statistical Methods for Business I (3)
- STA 2220 - Introduction to Statistical Concepts and Reasoning (4)
- STA 2222 - Statistical Methods for Biology (4)
- STA 2226 - Applied Probability and Statistics (4)

Explorations Area

Arts

The Arts area prepares students to demonstrate:

- *knowledge of cultural or historic artistic traditions in visual, auditory, movement, theatrical or cinematic art*
- *knowledge of the role of art as critical commentary on society and as an aesthetic expression of experience*
- AH 1001 - History of Western Art, Prehistory through Medieval (4)
- AH 1002 - History of Western Art, Renaissance to Present (4)
- AH 1003 - Arts of Asia and the Islamic World (4)
- ART 1000 - Foundations of Visual Literacy (4)
- ART 2100 - Drawing (4)
- ART 2500 - Sculpture (4)
- ART 3200 - Art + Technology (4)
- COM 2702 - Performance Communication (4)
- JMS 3603 - Popular Music Studies (4)
- DAN 1373 - Dance History and Appreciation (4)
- DAN 1375 - World Dance Traditions (4) (Also meets U.S. Diversity)
- DAN 1377 - Dance in Film (4) (Also meets U.S. Diversity)
- DAN 3380 - Contemporary Dance History: Revolution and Revisionism (4) (Also meets Writing Intensive in Gen Ed)
- FLM 1150 - Introduction to Film (4) (Also meets U.S. Diversity)
- LIT 2900 - Chinese Cinema (4)
- LIT 2909 - Topics in Hispanic Film (4)
- LIT 2910 - Topics in Chinese Cinema (4)
- MUE 3000 - University Chorus for General Education Arts (1)
- MUE 3003 - Oakland Chorale for General Education Arts (1)
- MUE 3018 - Chamber Orchestra for General Education Art (1)
- MUE 3028 - Symphonic Band for General Education Arts (1)
- MUE 3030 - Wind Symphony for General Education Art (1)

- MUS 1000 - An Introduction to Music **(4)**
- MUS 1001 - What's On Your Playlist? Music Listening and the Self **(4)**
- MUS 1002 - Exploring Technology in Music **(4)**
- MUS 1005 - Foundations of Rock **(4)** (Also meets U.S. Diversity)
- MUS 1006 - Exploring Film Music **(4)**
- MUS 1007 - Exploring Jazz **(4)** (Also meets U.S. Diversity)
- MUS 1010 - Exploring African Music **(4)**
- MUS 1011 - Exploring Caribbean Music **(4)** (Also meets U.S. Diversity)
- MUS 1012 - Exploring Indian Music **(4)**
- MUS 1014 - Exploring Hip Hop Music **(4)**
- MUS 1331 - History and Literature of Western Tonal Music **(3)**
- THA 1000 - Introduction to Theatre **(4)**
- THA 3001 - Theatre History I **(4)** (Also meets Writing Intensive in Gen Ed)
- THA 3002 - Theatre History II **(4)** (Also meets Writing Intensive in Gen Ed)
- THA 3006 - Cultural and Historical Development of American Musical Theatre **(4)** (Also meets Writing Intensive in Gen Ed and U.S. Diversity)

Global Perspective

The Global Perspective area prepares students to demonstrate:

- *knowledge of two or more of the following: environments, political systems, economies, societies, and religions in any region outside of the United States.*
- *knowledge of the role that different cultural heritages (past and present) play in forming values in another part of the world, enabling the student to function in a global context.*
- AH 1003 - Arts of Asia and the Islamic World **(4)**
- AN 1111 - Introduction to Cultural Anthropology **(4)**
- AN 2130 - Global Human Systems **(4)**
- CDS 2070 - Health Care Systems Around the World **(3)** (Also meets Writing Intensive in Gen Ed)
- DAN 4630 - German Contemporary Dance (Study Abroad in Berlin) **(4)**
- ECN 1600 - Introduction to the Global Economy **(4)** (Also meets Writing Intensive in Major)
- ECN 2020 - Principles of Global Macroeconomics **(4)**
- ECN 3260 - International Economic Development **(3)**
- FRH 1600 - Texts from the French and Francophone World (pre-1800) **(4)**
- FRH 1610 - Texts from the French and Francophone World (post-1800) **(4)**
- FLM 2320 - Global Cinemas (formerly Masterpieces of World Cinema) **(4)**
- HST 2010 - World History **(4)**
- HST 2500 - Introduction to Middle East History **(4)**
- IS 2005 - Issues in Global Health **(4)**
- IS 2060 - Global Cities **(4)**
- IS 2100 - Perspectives on China **(4)**
- IS 2121 - Women Gender and Sexuality in Asia **(4)**
- IS 2200 - Perspectives on Japan **(4)**
- IS 2300 - Perspectives on Africa **(4)** (Also meets Writing Intensive in Gen Ed)
- IS 2400 - Perspectives on India **(4)** (Also meets Writing Intensive in Gen Ed)
- IS 2500 - Perspectives on Latin America **(4)** (Also meets Writing Intensive in Gen Ed)
- IS 2600 - Perspectives on Russia and Eastern Europe **(4)** (Also meets Writing Intensive in Gen Ed)
- IS 2700 - Perspectives on the Middle East **(4)** (Also meets Writing Intensive in Gen Ed)

- MGT 1100 - Contemporary World Business **(4)** (Also meets Writing Intensive in Gen Ed)
- MUS 1010 - Exploring African Music **(4)**
- MUS 1017 - Exploring the Music of Latin America **(4)**
- MUS 4326 - Global Arts Study Abroad **(4)**
- NTR 3140 - Food, Nutrition, and Culture **(3)**
- PS 1400 - Comparative Politics **(4)** (Also meets Writing Intensive in Gen Ed)
- PS 1600 - Issues in World Politics **(4)**
- REL 1150 - Introduction to Islam **(4)** (Also meets Writing Intensive in Gen Ed)
- REL 1200 - Introduction to Judaism **(4)** (Also meets Writing Intensive in Gen Ed)
- REL 1250 - Introduction to Christianity **(4)**
- REL 1850 - World Religious Traditions **(4)**
- REL 3735 - Cross and Crown **(4)**
- SPN 1300 - Drugs in Latin American Culture **(4)**
- WGS 3040 - LGBTQ+ Lives Through Global Lens **(4)**
- WGS 3810 - Global Women, Global Issues **(4)**
- WRT 3060 - Cross-Cultural Rhetorics **(4)** (Also meets Writing Intensive in Gen Ed)

Language and Culture

The Language and Culture area prepares students to demonstrate:

- *knowledge of an additional language and its associated culture*
- *knowledge of linguistic and cultural diversity and the contributions of such diversity to the global society*

Notes

Language and Culture courses do not satisfy the Global Perspective area.

Students may meet the Language and Culture requirement through the satisfactory completion of a course having a prerequisite of an 1140 language course, or an American Sign Language course having COM 1500 as a prerequisite. The course cannot be used to satisfy any other general education area requirement.

For international undergraduate students whose native language is not English, the Language and Culture requirement may be waived when the student record includes one of the following:

- A TOEFL, MELAB, IELTS or Duolingo English Test score that satisfies the admissions criteria
- ESL courses from another regionally accredited institution
- A transcript indicating graduation from a high school instructed in a language other than English
 - ARB 1140 - Introduction to Arabic Language and Culture I **(4)**
 - CHE 1140 - Introduction to Chinese Language and Culture I **(4)**
 - COM 1500 - Introduction to American Sign Language **(4)**
 - COM 1501 - American Sign Language **(4)**
 - COM 2500 - American Sign Language III **(4)**
 - COM 2501 - American Sign Language IV **(4)**
 - FRH 1140 - Introduction to French Language and Culture I **(4)**
 - FRH 1190 - Accelerated Review of Elementary French and French Culture **(4)**
 - GRM 1140 - Introduction to German Language and Culture I **(4)**
 - HBR 1140 - Introduction to Hebrew Language and Culture I **(4)**
 - IT 1140 - Introduction to Italian Language and Culture I **(4)**
 - JPN 1140 - Introduction to Japanese Language and Culture I **(4)**

- LTN 1140 - Introduction to Latin Language and Roman Culture **(4)**
- LIN 1101 - The Humanity of Language **(4)**
- LIN 1181 - Introduction to U.S. and World Englishes **(4)**
- ML 1910 - Study Abroad - Tutorial in Foreign Language **(3 TO 4)**
- SPN 1140 - Introduction to Spanish Language and Culture I **(4)**
- SPN 1190 - Accelerated Review of Elementary Spanish and Spanish Culture **(4)**

Literature

The Literature area prepares students to demonstrate:

- *knowledge of how literature is an expression of culture*
- *knowledge of literary form*
- ENG 1300 - Introduction to Shakespeare **(4)**
- ENG 1500 - Literature of Ethnic America **(4)** (Also meets U.S. Diversity)
- ENG 1700 - Modern/Contemporary Literature **(4)**
- ENG 1800 - World Literature **(4)**
- ENG 2300 - British Literature **(4)**
- ENG 2500 - American Literature **(4)**
- ENG 3600 - Fiction **(4)**
- ENG 3610 - Poetry **(4)**
- ENG 3620 - Drama **(4)**
- ENG 3650 - The Bible as Literature **(4)**
- ENG 3660 - Classical Mythology **(4)**
- ENG 3690 - Memoir and Essay **(4)**
- FLM 2100 - Film and Formal Analysis **(4)**
- LIT 1000 - Introduction to Asian Literature **(4)**
- LIT 1810 - European Literature I **(4)**
- LIT 1820 - European Literature II **(4)**
- SPN 1200 - Spanish Worlds in English **(4)**

Natural Science and Technology

The Natural Science and Technology area prepares students to demonstrate:

- *knowledge of major concepts from natural science or technology, including developing and testing of hypotheses; drawing conclusions; and reporting of findings and some laboratory experience or an effective substitute*
- *how to evaluate sources of information in science or technology*
- BIO 1002 - Human Biology **(4)**
- BIO 1004 - Life on Earth **(4)**
- BIO 1200 - Biology I **(4)**
- BIO 1300 - Biology II **(4)**
- BIO 3000 - Biology and Society **(4)** (Also meets Writing Intensive in Gen Ed)
- CHM 1040 - Introduction to Chemical Principles **(4)**
- CHM 1440 - General Chemistry I **(4)** and CHM 1470 - General Chemistry Laboratory I
- CHM 3000 - Chemistry, Society Health **(4)** (Also meets Writing Intensive in Gen Ed)
- EGR 2400 - Introduction to Electrical and Computer Engineering **(4)**
- EGR 2500 - Introduction to Thermal Engineering **(4)**

- ENV 3080 - Introduction to Environmental Studies **(4)**
- GEO 1060 - Earth Science/Physical Geography **(4)**
- HS 2000 - Introduction to Health and Health Behaviors **(3)**
- LIN 1182 - Language and the Brain **(4)**
- MIS 1050 - Web Technologies for Managing Information Resources **(3)**
- PHY 1010 - General Physics I **(4)** and PHY 1100 - General Physics Lab I
- PHY 1040 - Astronomy: The Solar System **(4)**
- PHY 1050 - Astronomy: Stars and Galaxies **(4)**
- PHY 1060 - Earth Science/Physical Geography **(4)**
- PHY 1200 - The Physics of Everyday Life **(4)**
- PHY 1310 - Physics in Medicine **(4)**
- PHY 1510 - Introductory Physics I **(4)** and PHY 1100 - General Physics Lab I
- SCI 1000 - Physical Sciences in Life, the World and Beyond **(4)**

Social Science

The Social Science area prepares students to demonstrate:

- *knowledge of concepts, methods and theories designed to enhance understanding of human behavior and/or societies*
- *application of concepts and theories to problems involving individuals, institutions, or nations*
- AN 1111 - Introduction to Cultural Anthropology **(4)**
- AN 1511 - Human Evolution and Archaeology **(4)**
- AN 3110 - Culture, Society and Technology **(4)**
- COM 2400 - Relational Communication **(4)**
- JMS 2600 - Media and Social Identity **(4)**
- ECN 1500 - Economics in Today's World **(4)**
- ECN 2000 - Principles of Macroeconomics **(4)**
- ECN 2010 - Principles of Microeconomics **(4)**
- ECN 2010H - Principles of Microeconomics **(4)**
- ECN 2020 - Principles of Global Macroeconomics **(4)**
- EHS 1100 - Healthy Workplace: Protecting People and the Environment **(3)**
- ISE 1170 - Learning How to Learn **(4)**
- LIN 1185 - Language and Gender **(4)** (Also meets U.S. Diversity)
- PH 3000 - Introduction to Public Health **(3)**
- PS 1100 - Introduction to American Politics **(4)** (Also meets U.S. Diversity)
- PS 1400 - Comparative Politics **(4)** (Also meets Writing Intensive in Gen Ed)
- PS 1600 - Issues in World Politics **(4)**
- PS 3215 - The Politics of Race and Ethnicity **(4)** (Also meets U.S. Diversity and Writing Intensive in Gen Ed)
- PSY 1000 - Introduction to Psychology **(4)**
- SOC 1000 - Introduction to Sociology **(4)** (Also meets U.S. Diversity)
- SOC 1010 - Introduction to Sociology through Health and Medicine **(4)**
- SOC 2100 - Self and Society **(4)**
- WGS 1000 - Introduction to Women and Gender Studies **(4)** (Also meets U.S. Diversity)
- WGS 3010 - Introduction to LGBTQ Studies **(4)**
- WGS 3810 - Global Women, Global Issues **(4)**

Western Civilization

The Western Civilization area prepares students to demonstrate:

- *knowledge of the historical events and/or philosophical ideas of European or American culture*
- *knowledge of how Western ideas or institutions have evolved over time*
- AN 3110 - Culture, Society and Technology (4)
- COM 2202 - Persuasion and Social Change (4)
- JMS 3607 - Rise of Electronic Media (4)
- FRH 1600 - Texts from the French and Francophone World (pre-1800) (4)
- FRH 1610 - Texts from the French and Francophone World (post-1800) (4)
- HST 1100 - Introduction to American History Before 1877 (4) (Also meets U.S. Diversity)
- HST 1200 - Introduction to American History Since 1877 (4) (Also meets U.S. Diversity)
- HST 1300 - Europe in Global Context to 1600 (4)
- HST 1400 - Europe in Global Context from 1600 to the Present (4)
- HST 2280 - History of the African-American People (4) (Also meets U.S. Diversity)
- HST 2380 - Science and Technology in Western Culture (4)
- LBS 1000 - Exploration of the Arts and Sciences (4)
- MGT 2350 - Commerce in Western Civilization (3)
- ML 1400 - Holocaust and European Literature (4)
- MUS 1003 - Music, Culture and Western Civilization (4)
- PHL 1100 - Introduction to Philosophy (4)
- PHL 1300 - Introduction to Ethics (4)
- PHL 1310 - Introduction to Ethics in Science and Engineering (4)
- PHL 1320 - Introduction to Ethics for Healthcare Professions (4)
- PHL 1330 - Introduction to Ethics in Criminal Justice (4)
- PHL 3500 - Clinical Ethics (4)
- PHL 3880 - Animal Minds and Morals (4)
- PS 3030 - Rise of the Modern State (4)
- PS 3050 - Communism (4) (Also meets Writing Intensive in Gen Ed)
- REL 3735 - Cross and Crown (4)
- WRT 3020 - History of Rhetoric (4)

Integration Area

Writing Intensive in General Education

The Writing Intensive in General Education courses have eight criteria:

1. PREREQUISITE: A writing intensive course must require the completion of the university writing foundation requirement.
2. PERCENTAGE OF WRITING OF STUDENT'S GRADE: One-third of a student's grade must be based on assignments requiring substantive writing (papers, projects, reports, etc.).
3. MORE THAN ONE WRITING FORMAT: Students are required to complete a variety of writing assignments, such as written papers, laboratory reports, abstracts, quizzes, examinations, journals, ungraded writing assignments, writing during class, and writing in small groups.
4. CRITICAL INQUIRY: The writing process and the writing assignments should emphasize critical inquiry, including gathering, interpreting, and evaluating information appropriate to the area of study.

5. **EVALUATION OF BOTH FORM AND CONTENT:** Written work must be evaluated for format, organization, style, grammar, and punctuation, as well as content.

6. **DRAFT / FEEDBACK / REVISION:** At least one writing assignment must involve revision after the instructor has provided feedback on a first draft.

7. **ASSIGNMENT OF 500 OR MORE WORDS:** At least one writing assignment must be an out-of-class or lab assignment of at least 500 words.

8. **TOTAL AMOUNT OF WRITING:** Writing assignments may vary in number and length, but must add up to a minimum of 10 pages or 2,500 words over the semester.

Notes

Writing Intensive in the Major and Writing Intensive in General Education courses may also satisfy other areas within the general education program.

Writing Intensive requirements cannot be met with WRT 1050 or WRT 1060.

Students must have earned a grade of C in the Writing Foundations course to enroll in a Writing Intensive course.

Students may not apply non-classroom experience (course competency, Advanced Placement, International Baccalaureate, and/or CLEP credits) to satisfy general education requirements for Writing Intensive courses.

- AH 2100 - Concepts of Modern and Postmodern Art (4)
- AH 3000 - Critical Thinking and Writing in Art History II (4)
- AH 3420 - Modern Art 1900-1960 (4)
- AH 3430 - Art Since 1960 (4)
- AH 4998 - Senior Thesis in Art History I (4)
- AH 4999 - Senior Thesis in Art History II (4)
- BE 4999 - Research Project/Capstone Design (4)
- BIO 3000 - Biology and Society (4)
- BIS 3000 - Introduction to Interdisciplinary Studies (4)
- CDS 2070 - Health Care Systems Around the World (3)
- CHM 3000 - Chemistry, Society Health (4)
- COM 3300 - Communication, Culture, and Belonging (4)
- COM 3405 - Gender Communication (4)
- CW 2000 - Creative Writing for Non-Majors (4)
- CW 2500 - Introduction to Memoir and Essay (4)
- DAN 3380 - Contemporary Dance History: Revolution and Revisionism (4)
- ECN 3260 - International Economic Development (3)
- EED 3001 - Managing the Classroom Community for U.S. Diverse Learners (4)
- ENG 3110 - Advanced Critical Writing (4)
- ENV 3540 - Global Environmental Governance (4)
- EXS 4715 - Integrated Laboratory in Exercise Science (3)
- HS 3500 - Health Behavior Theories (3)
- HS 4450 - Laughter as Therapeutic Modality (3)
- HST 3315 - Science and Medicine in the Ancient World (4)
- HST 3340 - The Italian Renaissance (4)
- HST 3350 - The Scientific Revolution (4)
- IS 2300 - Perspectives on Africa (4)
- IS 2400 - Perspectives on India (4)

- IS 2500 - Perspectives on Latin America (4)
- IS 2600 - Perspectives on Russia and Eastern Europe (4)
- IS 2700 - Perspectives on the Middle East (4)
- IS 3001 - The Global Citizen (4)
- JMS 2000 - Introduction to Journalism (4)
- JMS 3290 - Diversity and Media Storytelling (4)
- JMS 4120 - Solutions News Bureau (4)
- LIB 2500 - Introduction to Library Research and Technology in the Information Age (4)
- LBS 2000 - Interdisciplinary Approaches to Liberal Studies (4)
- LBS 4999 - Senior Thesis II (4)
- LIN 4470 - The History of Linguistics (4)
- MGT 1100 - Contemporary World Business (4)
- MGT 4350 - Management Strategies and Policies (3)
- PHL 2100 - Fact, Value, and Knowledge (4)
- PHL 2200 - Ancient Greek Philosophy (4)
- PHL 2210 - Medieval Philosophy (4)
- PHL 2220 - Early Modern Philosophy (4)
- PHL 3110 - Freedom, Agency, and Responsibility (4)
- PHL 3300 - Ethical Theory (4)
- PHL 3310 - Ethics, Language and Reality (4)
- PHL 3400 - Metaphysics (4)
- PHL 3420 - Theories of Truth (4)
- PHL 3500 - Clinical Ethics (4)
- PHL 3520 - Public Health Ethics (4)
- PHL 3600 - Political Philosophy (4)
- PHL 3630 - Philosophy of Crime, Policing and Punishment (4)
- PHL 3700 - Philosophy of Science (4)
- PHL 3800 - Philosophy of Mind (4)
- PHL 3820 - Mental Causation (4)
- PHL 3830 - Philosophy of Artificial Intelligence (4)
- PHL 4100 - Philosophy of Language (4)
- PS 1400 - Comparative Politics (4)
- PS 3050 - Communism (4)
- PS 3215 - The Politics of Race and Ethnicity (4)
- PS 3310 - American Public Policy (4)
- PS 3730 - Global Environmental Governance (4)
- PSY 3040 - Animal Behavior (4)
- PSY 3160 - Cognitive Psychology (4)
- PSY 3180 - Biological Psychology (4)
- PSY 3210 - Child Development (4)
- PSY 3220 - Adolescence and Youth (4)
- PSY 3230 - Adulthood and Aging (4)
- PSY 3300 - Social Cognition (4)
- PSY 3330 - Motivation (4)
- PSY 3390 - Emotion (4)
- PSY 3430 - Child Psychopathology (4)
- PSY 3440 - Behavior Analysis (4)

- PSY 3450 - Health Psychology (4)
- PSY 3500 - Introduction to Psychometrics (4)
- PSY 4989 - History of Psychology (4)
- REL 1150 - Introduction to Islam (4)
- REL 1200 - Introduction to Judaism (4)
- WRT 2065 - Persuasive Writing: Various Themes (4)
- SOC 4970 - Applying the Sociological Imagination (4)
- THA 3001 - Theatre History I (4)
- THA 3002 - Theatre History II (4)
- THA 3006 - Cultural and Historical Development of American Musical Theatre (4)
- WGS 4810 - Sexual Orientation, Gender Identity and Education (4)
- WRT 2088 - Technical Writing (4)
- WRT 3010 - Contemporary Issues in Writing and Rhetoric Studies (4)
- WRT 3020 - History of Rhetoric (4)
- WRT 3030 - Literacy, Technology, and Civic Engagement (4)
- WRT 3060 - Cross-Cultural Rhetorics (4)
- WRT 3062 - Writing Center Studies and Tutoring Practice (4)
- WRT 3064 - Writing About Culture: Ethnography (4)
- WRT 3070 - Digital Identity and Culture (4)
- WRT 3071 - Podcasting (4)
- WRT 3072 - Rhetoric of Web Design (4)
- WRT 3074 - Digital Writing in Gaming Culture (4)
- WRT 3081 - Public Writing About Science (4)
- WRT 3082 - Business Writing (4)
- WRT 3084 - Race, Social Justice, and Professional Writing (4)
- WRT 3086 - Workshop in Creative Non-Fiction (4)
- WRT 4908 - Special Topics in Professional Writing (4)
- WRT 4996 - Independent Study (1 TO 4)
- WRT 4998 - Capstone (4)

Writing Intensive in the Major

The Writing Intensive in the Major courses have eight criteria:

1. **PREREQUISITE:** A writing intensive course must require the completion of the university writing foundation requirement.
2. **PERCENTAGE OF WRITING OF STUDENT'S GRADE:** One-third of a student's grade must be based on assignments requiring substantive writing (papers, projects, reports, etc.).
3. **MORE THAN ONE WRITING FORMAT:** Students are required to complete a variety of writing assignments, such as written papers, laboratory reports, abstracts, quizzes, examinations, journals, ungraded writing assignments, writing during class, and writing in small groups.
4. **CRITICAL INQUIRY:** The writing process and the writing assignments should emphasize critical inquiry, including gathering, interpreting, and evaluating information appropriate to the area of study.
5. **EVALUATION OF BOTH FORM AND CONTENT:** Written work must be evaluated for format, organization, style, grammar, and punctuation, as well as content.

6. **DRAFT / FEEDBACK / REVISION:** At least one writing assignment must involve revision after the instructor has provided feedback on a first draft.

7. **ASSIGNMENT OF 500 OR MORE WORDS:** At least one writing assignment must be an out-of-class or lab assignment of at least 500 words.

8. **TOTAL AMOUNT OF WRITING:** Writing assignments may vary in number and length, but must add up to a minimum of 10 pages or 2,500 words over the semester.

Notes

Writing Intensive in the Major and Writing Intensive in General Education courses may also satisfy other areas within the general education program.

Writing Intensive requirements cannot be met with WRT 1050 or WRT 1060.

Students must have earned a grade of C in the Writing Foundations course to enroll in a Writing Intensive course.

Students may not apply non-classroom experience (course competency, Advanced Placement, International Baccalaureate, and/or CLEP credits) to satisfy general education requirements for Writing Intensive courses.

Students must complete the Writing intensive in the Major requirement at Oakland University

- AH 2000 - Critical Thinking and Writing in Art History I (4)
- AH 2100 - Concepts of Modern and Postmodern Art (4)
- AH 3000 - Critical Thinking and Writing in Art History II (4)
- AH 3120 - Greek Art (4)
- AH 3130 - Roman Art (4)
- AH 3420 - Modern Art 1900-1960 (4)
- AH 3430 - Art Since 1960 (4)
- AH 3530 - History and Theory of Graphic Design (4)
- AH 4998 - Senior Thesis in Art History I (4)
- AH 4999 - Senior Thesis in Art History II (4)
- AN 4391 - Anthropological Theory (4)
- ART 3001 - Critical Theory and Practice in Art (4)
- BCM 4257 - Biochemistry Laboratory (3)
- BIO 3000 - Biology and Society (4)
- BIO 3920 - Directed Readings in Biology (1 TO 4)
- BIO 4970 - Scientific Inquiry and Communication (4)
- BIO 4972 - Integrative Biomedicine and Disease (4)
- BIS 4930 - Interdisciplinary Research (4)
- CHM 3000 - Chemistry, Society Health (4)
- CHM 3480 - Physical Chemistry Laboratory (2)
- CHM 4257 - Biochemistry Laboratory (3)
- FLM 4900 - Advanced Topics in Film (4)
- FLM 4999 - Filmmaking Thesis (4)
- COM 3300 - Communication, Culture, and Belonging (4)
- COM 4200 - Rhetorical Criticism in Communication (4)
- COM 4901 - Senior Research Seminar (4)
- COM 4930 - Community Field Experience (4)
- COM 4950 - Internship (4)

- COM 4970 - Communication Capstone (4)
- CRJ 4950 - Internship in Criminal Justice (4)
- CRJ 4970 - Capstone: Criminal Justice Policy Analysis (4)
- CSI 4999 - Senior Capstone Project (4)
- CW 4200 - Advanced Workshop in Fiction (4)
- CW 4300 - Advanced Workshop in Poetry (4)
- CW 4400 - Advanced Screenwriting (4)
- CW 4450 - Advanced Television Writing (4)
- CW 4500 - Advanced Workshop Memoir and Essay (4)
- DAN 3380 - Contemporary Dance History: Revolution and Revisionism (4)
- DES 2230 - Graphic Design I (4)
- ECE 4999 - Senior Design (4)
- ECN 1600 - Introduction to the Global Economy (4)
- ECN 4050 - Econometrics (3)
- ECN 4090 - Urban and Regional Economics (3)
- ECN 4180 - Seminar in Economic Policy (3)
- ECN 4210 - Monetary Economics (3)
- ECN 4560 - Public Finance (3)
- EED 2000 - Teaching, Learning, and Schools (3)
- EED 2001 - Advanced Exploration of K-8 Teaching (2)
- EED 3001 - Managing the Classroom Community for U.S. Diverse Learners (4)
- EED 3100 - Teaching and Learning for Equity, Diversity and Inclusion (3)
- ENG 4900 - Capstone Seminar: Topics in Literature and Language (4)
- ENG 4970 - Capstone Seminar: Literary Kinds (4)
- ENG 4975 - Capstone Seminar: Trans-Atlantic Traditions (4)
- ENG 4980 - Capstone Seminar: Major Authors (4)
- ENG 4985 - Capstone Seminar: Shakespeare (4)
- EHS 4460 - Industrial and Environmental Toxicology (3)
- ENV 3540 - Global Environmental Governance (4)
- ENV 4460 - Industrial and Environmental Toxicology (3)
- ENV 4950 - Environmental Science Internship (3)
- EXS 4715 - Integrated Laboratory in Exercise Science (3)
- FLM 2150 - Methods of Screen Criticism (4)
- FRH 3180 - French Creative Writing (4)
- FRH 4160 - French Literature from the Middle Ages through the Sixteenth Century (4)
- FRH 4170 - French Literature - Seventeenth and Eighteenth Centuries (4)
- FRH 4190 - French Literature - Nineteenth Century (4)
- FRH 4200 - Modern and Contemporary French Literature (4)
- FRH 4970 - Undergraduate Seminar (2 OR 4)
- GRM 3180 - German Composition (2)
- HRD 3530 - Workforce Diversity (4)
- HRD 4950 - Internship in HRD (4)
- HS 3500 - Health Behavior Theories (3)
- HS 4450 - Laughter as Therapeutic Modality (3)
- HS 4500 - Ethics in Health Care (4)
- HST 3000 - Seminar in Historical Research (4)
- HST 3010 - Historical Thinking and Writing (4)

- ISE 4491 - Senior Design (4)
- JMS 2000 - Introduction to Journalism (4)
- JMS 3290 - Diversity and Media Storytelling (4)
- JMS 4120 - Solutions News Bureau (4)
- JMS 4950 - Journalism Internship (4)
- JPN 3180 - Japanese Composition (4)
- JPN 4200 - Modern and Contemporary Japanese Literature (4)
- LBS 2000 - Interdisciplinary Approaches to Liberal Studies (4)
- LBS 4999 - Senior Thesis II (4)
- LIN 4335 - Psycholinguistics (4)
- LIN 4470 - The History of Linguistics (4)
- ME 4999 - Senior Mechanical Engineering Design Project (4)
- MGT 4350 - Management Strategies and Policies (3)
- MUS 3211 - Musical Analysis and Form (4)
- MUS 3212 - Counterpoint (4)
- MUS 3331 - History and Literature of Medieval and Renaissance Music (3)
- MUS 3332 - History and Literature of Western Music from ca. 1850 to the Present (3)
- MUS 4210 - Analysis of Music Since 1900 (4)
- MUS 4320 - The Nineteenth-Century Symphony: History, Performance and Analysis (4)
- MUS 4323 - Berlin's Musical Cultures: 1900-1989 (4)
- MUS 4330 - Seminar in Opera and Drama (4)
- MUS 4431 - Teaching Music in the 21st Century (3)
- NRS 3012 - Research for Evidence-Based Nursing Practice (3)
- NRS 3071 - Research Basis of Nursing Practice (4)
- NTR 4500 - Professional Practice and Ethics in Nutrition (3)
- PHL 2100 - Fact, Value, and Knowledge (4)
- PHL 2200 - Ancient Greek Philosophy (4)
- PHL 2210 - Medieval Philosophy (4)
- PHL 2220 - Early Modern Philosophy (4)
- PHL 3110 - Freedom, Agency, and Responsibility (4)
- PHL 3300 - Ethical Theory (4)
- PHL 3310 - Ethics, Language and Reality (4)
- PHL 3400 - Metaphysics (4)
- PHL 3420 - Theories of Truth (4)
- PHL 3500 - Clinical Ethics (4)
- PHL 3520 - Public Health Ethics (4)
- PHL 3600 - Political Philosophy (4)
- PHL 3630 - Philosophy of Crime, Policing and Punishment (4)
- PHL 3700 - Philosophy of Science (4)
- PHL 3800 - Philosophy of Mind (4)
- PHL 3820 - Mental Causation (4)
- PHL 3830 - Philosophy of Artificial Intelligence (4)
- PHL 4100 - Philosophy of Language (4)
- PHY 4970 - Undergraduate Seminar (3)
- PHY 4995 - Independent Research (3 TO 6)
- PS 3005 - Western Political Thought I (4)
- PS 3010 - Western Political Thought II (4)

- PS 3020 - American Political Thought (4)
- PS 3040 - International Politics: Theory and Practice (4)
- PS 3050 - Communism (4)
- PS 3070 - Politics Through Literature (4)
- PS 3215 - The Politics of Race and Ethnicity (4)
- PS 3305 - Public Administration (4)
- PS 3310 - American Public Policy (4)
- PS 3425 - The Russian Political System (4)
- PS 3715 - Gender and Int'l Relations (4)
- PS 3730 - Global Environmental Governance (4)
- PSY 3160 - Cognitive Psychology (4)
- PSY 3180 - Biological Psychology (4)
- PSY 3210 - Child Development (4)
- PSY 3220 - Adolescence and Youth (4)
- PSY 3230 - Adulthood and Aging (4)
- PSY 3300 - Social Cognition (4)
- PSY 3330 - Motivation (4)
- PSY 3390 - Emotion (4)
- PSY 3430 - Child Psychopathology (4)
- PSY 3440 - Behavior Analysis (4)
- PSY 3450 - Health Psychology (4)
- PSY 3500 - Introduction to Psychometrics (4)
- PSY 4989 - History of Psychology (4)
- SED 3000 - Introduction to Secondary Education (1 TO 4)
- SED 3001 - Public Education for Prospective K-12 Teachers (2)
- SOC 4970 - Applying the Sociological Imagination (4)
- SPN 4080 - Advanced Spanish Conversation and Composition (4)
- SPN 4160 - Spanish Literature - Fifteenth and Sixteenth Centuries (4)
- SPN 4170 - Spanish Literature - Seventeenth Century (4)
- SPN 4180 - Cervantes (4)
- SPN 4190 - Spanish Literature - Eighteenth and Nineteenth Centuries (4)
- SPN 4200 - Modern and Contemporary Spanish Literature (4)
- SPN 4880 - Spanish-American Literature before 1888 (4)
- SPN 4890 - Spanish-American Literature after 1888 (4)
- STA 4002 - Applied Linear Models I (4)
- SW 3302 - Social Welfare Policies (4)
- SW 4971 - Social Work Seminar II (4)
- THA 3001 - Theatre History I (4)
- THA 3002 - Theatre History II (4)
- WGS 4020 - Women and Gender Studies Capstone Course (4)
- WRT 2065 - Persuasive Writing: Various Themes (4)
- WRT 2088 - Technical Writing (4)
- WRT 3010 - Contemporary Issues in Writing and Rhetoric Studies (4)
- WRT 3020 - History of Rhetoric (4)
- WRT 3030 - Literacy, Technology, and Civic Engagement (4)
- WRT 3060 - Cross-Cultural Rhetorics (4)
- WRT 3062 - Writing Center Studies and Tutoring Practice (4)

- WRT 3064 - Writing About Culture: Ethnography (4)
- WRT 3070 - Digital Identity and Culture (4)
- WRT 3071 - Podcasting (4)
- WRT 3074 - Digital Writing in Gaming Culture (4)
- WRT 3084 - Race, Social Justice, and Professional Writing (4)
- WRT 3086 - Workshop in Creative Non-Fiction (4)
- WRT 4908 - Special Topics in Professional Writing (4)
- WRT 4996 - Independent Study (1 TO 4)
- WRT 4998 - Capstone (4)

Knowledge Applications

The Knowledge Applications area prepares students to demonstrate:

- *how knowledge in a field outside of the student's major can be evaluated and applied to solve problems across a range of applications*
- *knowledge of the personal, professional, ethical, and societal implications of these applications*

Notes

Knowledge Applications courses must be outside the rubric of the student's major.

- AH 2200 - Introduction to the History of Western Architecture (4) Prereq: Arts
- AH 3000 - Critical Thinking and Writing in Art History II (4) Prereq: Arts (Also meets Writing Intensive in General Education)
- AH 3110 - Art of the Ancient Near East (4) Prereq: Arts
- AH 3120 - Greek Art (4) Prereq: Arts
- AH 3130 - Roman Art (4) Prereq: Arts
- AMS 3000 - Topics in American Culture (4) Prereq: Western Civilization (Also meets U.S. Diversity)
- AN 3560 - Historical Archaeology (4) Prereq: Social Science (Also meets U.S. Diversity)
- APM 1663 - Mathematics for Information Technology (4) Prereq: Formal Reasoning or Natural Science and Technology
- ARB 2140 - Second Year Arabic I (4) Prereq: Language and Culture
- ARB 2150 - Second Year Arabic II (4) Prereq: Language and Culture
- ART 1150 - Drawing for Non-Majors (4) Prereq: Arts
- ART 1160 - Photography for Non-Majors (4) Prereq: Arts
- ART 1170 - Painting for Non-Majors (4) Prereq: Arts
- CHE 2140 - Second Year Chinese I (4) Prereq: Language and Culture
- CHE 2150 - Second Year Chinese II (4) Prereq: Language and Culture
- COM 1000 - Introduction to Communication Studies (4) Prereq: Social Science
- COM 2000 - Public Speaking (4) Prereq: Social Science
- COM 2500 - American Sign Language III (4)
- COM 2501 - American Sign Language IV (4)
- CW 2000 - Creative Writing for Non-Majors (4) (Also meets Writing Intensive in General Education)
- ECN 3030 - Managerial Economics (3) Prereq: Formal Reasoning and Social Science
- ENG 3520 - African American Literature (4) Prereq: Literature (Also meets U.S. Diversity)
- ENG 3640 - Biography (4) Prereq: Western Civilization
- ENG 3675 - Adaptation: Fiction, Drama, Film (4) Prereq: Literature
- ENV 3540 - Global Environmental Governance (4) Prereq: Social Science (Also meets Writing Intensive in General Education)

- FLM 1400 - Filmmaking for Non-Majors **(4)** Prereq: Arts
- FLM 3305 - Adaptation: Fiction, Drama, Film **(4)** Prereq: Literature
- FRH 2140 - Second Year French I **(4)** Prereq: Language and Culture
- FRH 2150 - Second Year French II **(4)** Prereq: Language and Culture
- GRM 2140 - Second Year German I **(4)** Prereq: Language and Culture
- GRM 2150 - Second Year German II **(4)** Prereq: Language and Culture
- HBR 2140 - Second Year Hebrew I **(4)** Prereq: Language and Culture
- HBR 2150 - Second Year Hebrew II **(4)** Prereq: Language and Culture
- HRD 3230 - Fundamentals of Human Interaction **(4)** Prereq: Writing Intensive in General Education or Social Science
- HRD 3600 - Lean Principles and Practices in Organizations **(4)** Prereq: Writing Intensive in General Education or Social Science
- HRD 4510 - Negotiation for Personal Success **(4)** Prereq: Social Science
- HRD 4600 - Lean Kaizen in Organizations **(4)** Prereq: Social Science
- HS 3500 - Health Behavior Theories **(3)**
- HS 4450 - Laughter as Therapeutic Modality **(3)** Prereq: Natural Science and Technology or Social Science (Also meets Writing Intensive in General Education)
- IS 3001 - The Global Citizen **(4)** Prereq: Global Perspective (Also meets Writing Intensive in General Education)
- IS 3002 - Globalization and the International System **(4)** Prereq: Global Perspective
- IT 2140 - Second Year Italian I **(4)** Prereq: Language and Culture
- IT 2150 - Second Year Italian II **(4)** Prereq: Language and Culture
- ISE 1150 - How Things Work **(4)** Prereq: Writing Foundations
- JMS 2000 - Introduction to Journalism **(4)** Prereq: Writing Foundations
- JPN 2140 - Second Year Japanese I **(4)** Prereq: Language and Culture
- JPN 2150 - Second Year Japanese II **(4)** Prereq: Language and Culture
- LIB 2500 - Introduction to Library Research and Technology in the Information Age **(4)** Prereq: Writing Foundations
- MTH 1555 - Calculus II **(4)** Prereq: Formal Reasoning
- MUS 2020 - Computer-based Music Composition **(4)** Prereq: Arts
- MUS 2025 - Exploring Songwriting **(4)** Prereq: Arts
- NRS 3081 - Human Sexuality **(4)** Prereq: Natural Science and Technology or Social Science (Also meets U.S. Diversity)
- NRS 4015 - Nursing Care of Communities and Populations **(0 OR 5)** Prereq: Global Perspective (Also meets U.S. Diversity)
- PHL 2100 - Fact, Value, and Knowledge **(4)** Prereq: Formal Reasoning (Also meets Writing Intensive in General Education)
- PHL 2200 - Ancient Greek Philosophy **(4)** Prereq: Western Civilization (Also meets Writing Intensive in General Education)
- PHL 2210 - Medieval Philosophy **(4)** Prereq: Western Civilization (Also meets Writing Intensive in General Education)
- PHL 2220 - Early Modern Philosophy **(4)** Prereq: Western Civilization (Also meets Writing Intensive in General Education)
- PHL 3000 - Advanced Symbolic Logic **(4)** Prereq: Formal Reasoning
- PHL 3300 - Ethical Theory **(4)** Prereq: Western Civilization (Also meets Writing Intensive in Gen Ed or Writing Intensive in the Major)
- PHL 3310 - Ethics, Language and Reality **(4)** Prereq: Western Civilization (Also meets Writing Intensive in General Education or Writing Intensive in the Major)
- PHL 3400 - Metaphysics **(4)** Prereq: Formal Reasoning (Also meets Writing Intensive in General Education or Writing Intensive in the Major)

- PHL 3420 - Theories of Truth **(4)** Prereq: Western Civilization (Also meets Writing Intensive in General Education or Writing Intensive in the Major)
- PHL 3500 - Clinical Ethics **(4)**
- PHL 3520 - Public Health Ethics **(4)**
- PHL 3600 - Political Philosophy **(4)**
- PHL 3630 - Philosophy of Crime, Policing and Punishment **(4)**
- PHL 3700 - Philosophy of Science **(4)**
- PHL 3800 - Philosophy of Mind **(4)**
- PHL 3820 - Mental Causation **(4)**
- PHL 3830 - Philosophy of Artificial Intelligence **(4)** Prereq: Formal Reasoning (Also meets Writing Intensive in General Education or Writing Intensive in the Major)
- PHL 4100 - Philosophy of Language **(4)** Prereq: Formal Reasoning
- PHY 1020 - General Physics II **(4)** Prereq: Natural Science and Technology
- PHY 1520 - Introductory Physics II **(4)** Prereq: Formal Reasoning or Natural Science and Technology
- PS 3730 - Global Environmental Governance **(4)** Prereq: Social Science (Also meets Writing Intensive in General Education)
- PSY 2250 - Introduction to Life-Span Developmental Psychology **(4)** Prereq: Social Science
- QMM 2400 - Statistical Methods for Business I **(3)** Prereq: Formal Reasoning
- QMM 2400H - Statistical Methods for Business I **(3)** Prereq: Formal Reasoning
- QMM 2410 - Statistical Methods for Business II **(3)** Prereq: Formal Reasoning
- QMM 2410H - Statistical Methods for Business II **(3)** Prereq: Formal Reasoning
- REL 3140 - Religion in the Modern World **(4)** Prereq: Social Science or Global Perspective
- REL 3750 - Science and Religion **(4)** Prereq: Natural Science and Technology
- SOC 3610 - Racial and Ethnic Relations **(4)** Prereq: Social Science (Also meets U.S. Diversity)
- SPN 2140 - Second Year Spanish I **(4)** Prereq: Language and Culture
- SPN 2150 - Second Year Spanish II **(4)** Prereq: Language and Culture
- WRT 2088 - Technical Writing **(4)** Prereq: Writing Foundations (Also meets Writing Intensive in Gen Ed or Writing Intensive in the Major)
- WRT 3020 - History of Rhetoric **(4)** Prereq: Writing Foundations (Also meets Writing Intensive in General Education)
- WRT 3062 - Writing Center Studies and Tutoring Practice **(4)** Prereq: Writing Foundations (Also meets Writing Intensive in General Education)
- WRT 3064 - Writing About Culture: Ethnography **(4)** Prereq: Writing Foundations (Also meets U.S. Diversity and Writing Intensive in General Education)
- WRT 3082 - Business Writing **(4)** Prereq: Writing Foundations (Also meets Writing Intensive in General Education)
- WRT 3086 - Workshop in Creative Non-Fiction **(4)** Prereq: Writing Foundations (Also meets Writing Intensive in General Education or Writing Intensive in the Major)
- WRT 4908 - Special Topics in Professional Writing **(4)** Prereq: Writing Foundations (Also meets Writing Intensive in General Education or Writing Intensive in the Major)
- WRT 4996 - Independent Study **(1 TO 4)**

Capstone

The Capstone course prepares students to demonstrate:

- *appropriate uses of a variety of methods of inquiry and a recognition of ethical considerations that arise*
- *the ability to integrate the knowledge learned in general education and its relevance to the student's life and career*

Notes

Requirement may be met by an approved course in the major or an approved course outside of the major.

Students must complete the Capstone requirement at Oakland University.

- ACS 4550 - Financial Mathematics (3)
- AH 4998 - Senior Thesis in Art History I (4)
- AH 4999 - Senior Thesis in Art History II (4)
- AN 4391 - Anthropological Theory (4)
- APM 4550 - Risk Management (3)
- ART 4999 - Senior Thesis in Studio Art (4)
- BE 4999 - Research Project/Capstone Design (4)
- BCM 4257 - Biochemistry Laboratory (3)
- BIO 4970 - Scientific Inquiry and Communication (4)
- BIO 4972 - Integrative Biomedicine and Disease (4)
- BIS 4930 - Interdisciplinary Research (4)
- CHM 4257 - Biochemistry Laboratory (3)
- CHM 4996 - Independent Research (3)
- FLM 4900 - Advanced Topics in Film (4)
- FLM 4901 - Advanced Topics in Film Theory (4)
- FLM 4999 - Filmmaking Thesis (4)
- COM 4901 - Senior Research Seminar (4)
- COM 4930 - Community Field Experience (4)
- COM 4950 - Internship (4)
- COM 4970 - Communication Capstone (4)
- CRJ 4970 - Capstone: Criminal Justice Policy Analysis (4)
- CSI 4999 - Senior Capstone Project (4)
- CW 4200 - Advanced Workshop in Fiction (4)
- CW 4300 - Advanced Workshop in Poetry (4)
- CW 4400 - Advanced Screenwriting (4)
- CW 4450 - Advanced Television Writing (4)
- CW 4500 - Advanced Workshop Memoir and Essay (4)
- DAN 3500 - Choreography III (4)
- DES 4430 - Graphic Design III (CAPSTONE) (4)
- ECE 4999 - Senior Design (4)
- ECN 4090 - Urban and Regional Economics (3)
- ECN 4180 - Seminar in Economic Policy (3)
- ECN 4210 - Monetary Economics (3)
- ECN 4500 - Risk Management (3)
- ECN 4560 - Public Finance (3)
- EED 4950 - Internship in Elementary Education (9 to 12)
- ENG 4900 - Capstone Seminar: Topics in Literature and Language (4)
- ENG 4970 - Capstone Seminar: Literary Kinds (4)
- ENG 4975 - Capstone Seminar: Trans-Atlantic Traditions (4)
- ENG 4980 - Capstone Seminar: Major Authors (4)
- ENG 4985 - Capstone Seminar: Shakespeare (4)
- ENV 4950 - Environmental Science Internship (3)
- EXS 4715 - Integrated Laboratory in Exercise Science (3)
- EXS 4960 - Practicum in Exercise Science (3)

- FRH 4160 - French Literature from the Middle Ages through the Sixteenth Century (4)
- FRH 4170 - French Literature - Seventeenth and Eighteenth Centuries (4)
- FRH 4190 - French Literature - Nineteenth Century (4)
- FRH 4200 - Modern and Contemporary French Literature (4)
- FRH 4970 - Undergraduate Seminar (2 OR 4)
- GRM 4130 - German Literature from the Middle Ages through the Seventeenth Century (4)
- GRM 4180 - German Literature - Eighteenth Century (4)
- GRM 4190 - German Literature - Nineteenth Century (4)
- GRM 4200 - Modern and Contemporary German Literature (4)
- GRM 4970 - Undergraduate Seminar (2 OR 4)
- HS 4500 - Ethics in Health Care (4)
- HST 4980 - Historical Research Seminar (4)
- IS 4995 - Directed Research in International Studies (2 TO 8)
- ISE 4491 - Senior Design (4)
- JMS 4120 - Solutions News Bureau (4)
- JMS 4950 - Journalism Internship (4)
- JPN 4200 - Modern and Contemporary Japanese Literature (4)
- LBS 4999 - Senior Thesis II (4)
- LIN 4470 - The History of Linguistics (4)
- ME 4999 - Senior Mechanical Engineering Design Project (4)
- MGT 4350 - Management Strategies and Policies (3)
- MUA 4998 - Senior Recital (4)
- MUS 4320 - The Nineteenth-Century Symphony: History, Performance and Analysis (4)
- MUS 4323 - Berlin's Musical Cultures: 1900-1989 (4)
- MUS 4330 - Seminar in Opera and Drama (4)
- MUS 4431 - Teaching Music in the 21st Century (3)
- MUS 4952 - Internship in K-12 Music Education (4 TO 12)
- MUS 4998 - Senior Project: Music Technology and Recording (3)
- NRS 4026 - Nursing Capstone (0 OR 5)
- NRS 4585 - Nursing Capstone Experience (4)
- NTR 4500 - Professional Practice and Ethics in Nutrition (3)
- PH 4950 - Internship in Health Promotion (4)
- PHL 4970 - Seminar on a Philosophical Topic (4)
- PHY 4970 - Undergraduate Seminar (3)
- PHY 4995 - Independent Research (3 TO 6)
- PS 4950 - Public Administration Internship (4)
- PS 4955 - Political Science/International Relations Internship (4)
- PS 4970 - Seminar in American Politics (4)
- PS 4975 - Seminar in the Comparative Study of Political Systems (4)
- PS 4980 - Seminar in International Relations (4)
- PSY 4500 - Advanced Research Design in Psychology (4)
- PSY 4921 - Readings and Research Projects (4)
- PSY 4930 - Field Experience in Psychology (4)
- PSY 4971 - Seminar in Cognition, Perception, and Biological Psychology (4)
- PSY 4972 - Seminar in Developmental Psychology (4)
- PSY 4973 - Seminar in Social Psychology (4)
- PSY 4977 - Seminar: Psychopharmacology (4)

- PSY 4978 - Seminar: Cognitive Development in Children (4)
- PSY 4979 - Seminar: Resilient Aging (4)
- PSY 4980 - Seminar: Moral Development (4)
- PSY 4982 - Intergroup Relations (4)
- PSY 4983 - Cognitive Psychology: Theory and Application (4)
- PSY 4989 - History of Psychology (4)
- PSY 4998 - Honors Independent Studies I (4)
- SED 4952 - Internship in Secondary Education (4 TO 12)
- SOC 4970 - Applying the Sociological Imagination (4)
- SPN 4160 - Spanish Literature - Fifteenth and Sixteenth Centuries (4)
- SPN 4170 - Spanish Literature - Seventeenth Century (4)
- SPN 4180 - Cervantes (4)
- SPN 4190 - Spanish Literature - Eighteenth and Nineteenth Centuries (4)
- SPN 4200 - Modern and Contemporary Spanish Literature (4)
- SPN 4880 - Spanish-American Literature before 1888 (4)
- SPN 4890 - Spanish-American Literature after 1888 (4)
- STA 4114 - Introduction to Mathematical Statistics II (4)
- SW 4971 - Social Work Seminar II (4)
- THA 3031 - Stage Manager Project (1)
- THA 4007 - Advanced Directing Project (1)
- THA 4020 - Advanced Performance Projects (1)
- THA 4025 - Advanced Design, Production and Management Project (1)
- THA 4031 - Dramaturgy/Assistant Director Project (1)
- THA 4081 - Classical Theatre Study in Greece (4)
- THA 4095 - Advanced Company Class (1)
- THA 4950 - Internship (1 TO 4)
- WGS 4020 - Women and Gender Studies Capstone Course (4)
- WRT 4998 - Capstone (4)

U.S. Diversity

U.S. Diversity prepares the student to demonstrate knowledge of how diverse value systems and societal structures in the United States are influenced by at least two of the following: race, gender, and ethnicity. A course can qualify to meet the requirement if one-half of its content deals with these issues. Approved diversity courses may double count in the major and/or general education.

- *Knowledge of how diverse value systems and societal structures are influenced by at least two of the following: race, gender, and ethnicity*
- *Major challenges and issues these raise in society*

Note

U.S. Diversity may be fulfilled through courses that also satisfy the Explorations areas.

- AH 3430 - Art Since 1960 (4) (Also meets Writing Intensive in Gen Ed)
- AMS 3000 - Topics in American Culture (4)
- AN 3260 - Peoples and First Nations of North America (4)
- AN 3560 - Historical Archaeology (4)
- COM 3300 - Communication, Culture, and Belonging (4) (Also meets Writing Intensive in Gen Ed)
- COM 3405 - Gender Communication (4) (Also meets Writing Intensive in Gen Ed)

- CW 2500 - Introduction to Memoir and Essay **(4)**
- DAN 1375 - World Dance Traditions **(4)**
- DAN 1377 - Dance in Film **(4)** (Also meets Arts)
- ECN 3150 - Economics of Gender and Ethnicity **(3)**
- EED 3001 - Managing the Classroom Community for U.S. Diverse Learners **(4)** (Also meets Writing Intensive in Gen Ed)
- EED 3100 - Teaching and Learning for Equity, Diversity and Inclusion **(3)**
- ENG 1500 - Literature of Ethnic America **(4)**
- ENG 3510 - Selected Ethnic Literature **(4)**
- ENG 3520 - African American Literature **(4)**
- FLM 1150 - Introduction to Film **(4)**
- HRD 3530 - Workforce Diversity **(4)**
- HST 1100 - Introduction to American History Before 1877 **(4)**
- HST 1200 - Introduction to American History Since 1877 **(4)**
- HST 2280 - History of the African-American People **(4)**
- HST 3140 - History of the American South **(4)**
- HST 3265 - Women in Modern America **(4)**
- HST 3275 - History of American Families **(4)**
- HST 3280 - The Civil Rights Movement in America **(4)**
- HST 3285 - History of African-American Women **(4)**
- JMS 3290 - Diversity and Media Storytelling **(4)**
- LIN 1185 - Language and Gender **(4)**
- LIN 4374 - Cross-Cultural Communication **(4)**
- LIN 4375 - Language and Culture **(4)**
- MUS 1005 - Foundations of Rock **(4)** (Also meets Arts)
- MUS 1007 - Exploring Jazz **(4)** (Also meets Arts)
- MUS 1011 - Exploring Caribbean Music **(4)** (Also meets Arts)
- MUS 1018 - Performing Arts Service Learning **(4)**
- NRS 3081 - Human Sexuality **(4)**
- NRS 4015 - Nursing Care of Communities and Populations **(0 OR 5)**
- NRS 4551 - Population Health **(4)**
- PH 3000 - Introduction to Public Health **(3)**
- PS 1100 - Introduction to American Politics **(4)**
- PS 3215 - The Politics of Race and Ethnicity **(4)** (Also meets Writing Intensive in Gen Ed)
- SOC 1000 - Introduction to Sociology **(4)**
- SOC 1010 - Introduction to Sociology through Health and Medicine **(4)**
- SOC 3610 - Racial and Ethnic Relations **(4)**
- SOC 3660 - Men and Masculinities **(4)**
- THA 3006 - Cultural and Historical Development of American Musical Theatre **(4)** (Also meets Writing Intensive in Gen Ed and Arts)
- WGS 1000 - Introduction to Women and Gender Studies **(4)**
- WGS 3660 - Men and Masculinities **(4)**
- WGS 3821 - History of American Families **(4)**
- WGS 3822 - History of African-American Women **(4)**
- WGS 3880 - Women in Modern America **(4)**
- WGS 4810 - Sexual Orientation, Gender Identity and Education **(4)** (Also meets Writing Intensive in Gen Ed)
- WHP 3700 - Culture, Ethnicity and Well-being **(3)**
- WRT 3064 - Writing About Culture: Ethnography **(4)** (Also meets Writing Intensive in Gen Ed)

- WRT 3070 - Digital Identity and Culture **(4)** (Also meets Writing Intensive in Gen Ed)
- WRT 3084 - Race, Social Justice, and Professional Writing **(4)**

Notes

Students using this catalog to meet general education requirements may also use any course subsequently approved by the General Education Committee and published in a later catalog to satisfy requirements in a particular area. If a course listed below is removed from lists of approved courses in later catalogs, it may still be used to meet a general education requirement by students following the current catalog until the catalog expires (six years).

Transfer students should refer to the transfer student page.

Some of the approved courses may not be offered every semester. Students should check with their advisers to ensure that their preferred courses will be offered.