Undergraduate Student Handbook

2016-2017

Department of Chemical & Materials Engineering

Kettering Labs Room 524

University of Dayton

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Web Page:

[go.udayton.edu/ChemicalEngineering](http://go.udayton.edu/ChemicalEngineering" \t "_blank)

# Mission Statement

The mission of the Chemical Engineering Department is to educate students who are highly sought after by employers internationally, excel in graduate and professional schools, engage in life-long learning, make significant contributions to the profession and society. The department will promote and support integrated teaching/learning, scholarship, and the Marianist tradition of community, leadership, and service.

## Chemical Engineering Program Educational Objectives

1. Chemical Engineering graduates succeed in their chosen vocation, with successful careers in the chemical process industry and related fields, and excel in graduate school.
2. Chemical Engineering graduates are committed to performing ethically while serving their professions, companies, and communities.
3. Chemical Engineering graduates exhibit strong critical thinking skills from the breadth of their general education and the depth of their foundation in engineering principles, and engage in continuous intellectual and personal growth.
4. Chemical Engineering graduates are committed to the Marianist tradition of community, leadership, and service.

# Chemical Engineering Program Outcomes

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet needs within realistic constraints, such as environmental, social political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition for the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

# Introduction

This handbook has been prepared to inform and assist Chemical Engineering students about their program of study and about the Chemical Engineering Department at the University of Dayton. Most of the information presented is available in other sources, but it has been collected here for your convenience.

With the other activities and information you are being inundated with the first few weeks of college, it will be hard to digest all of the information contained in this handbook at once. So when you have settled into your routine of classes it is very important that you take some time to examine the information contained herein, especially the following:

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# Bachelor in Chemical Engineering

Chemical engineering applies the principles of the physical sciences, economics, and human relations to research, design, build, and supervise facilities that convert raw materials into useful products and services.

The majority of chemical engineers are involved in the chemical process industries that produce many of the materials and items needed in everyday life. These include medicine, food, fertilizers, plastics, synthetic fibers, petroleum, petrochemicals, ceramics, and pulp and paper products. A chemical engineer may pursue a professional career in many other fields, such as energy conversion, pollution control, medical research, and materials development in aerospace and electronic industries. Chemical engineers are employed in research, development, design, production, sales, consulting, and management positions. They are also found in government and education. Many use a chemical engineering education as a stepping stone to law, medicine, or corporate management.

The curriculum in chemical engineering serves as basic training for positions in these diverse areas of the manufacturing industry or for graduate study leading to advanced degrees. The first part of the chemical engineering curriculum provides a firm foundation in mathematics, physics, and chemistry. The chemistry background is stressed. The second part of the curriculum offers a balance between classroom and laboratory experience in stressing chemical engineering topics such as transport phenomena, thermodynamics, kinetics and reactor design, separation processes, fluid flow and heat transfer operations, process control, and process design. The development of design tools, communication, and interpersonal skills is integrated throughout the curriculum. The curriculum allows concentrations in emerging technologies such as bioengineering, environmental engineering and materials engineering. Those interested in attending medical/dental school can pursue a pre-med preparation as part of their curriculum.

The Chemical Engineering Department at the University of Dayton is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. The full-time faculty focuses on core courses in the Chemical Engineering program, while part-time faculty members from industry bring current industrial practice to the classroom.

# Departmental Directory

**Departmental Offices:** Kettering Labs 524 **Telephone:** (937) 229-2627

(On campus – dial 92627)

**Web Site Address:**

http://www.udayton.edu/engineering/chemical\_and\_materials/index.php

|  |  |
| --- | --- |
| Department Chairman: | Dr. Charles Browning  Kettering Labs 524  cbrowning1@udayton.edu |
| Chemical Engineering Director: | Dr. Michael Elsass  Kettering Labs 524  melsass1@udayton.edu |
| Administrative Assistant: | Janet Pastor  Kettering Labs 524  jpastor1@udayton.edu |
| Lab Manager: | Mike Green  Science Center Room 177A  mgreen1@udayton.edu |
| First and Second Year Academic Advisor: | Liz Mancini  Kettering Labs 501  emancini1@udayton.edu |
| Graduate Studies Coordinator: | Dr. Kevin J. Myers  Kettering Labs 524  kmyers1@udayton.edu |

**Faculty:**

|  |  |
| --- | --- |
| Mr. Thane Brown | Dr. Donald A. Klosterman – KL 542 |
| Dr. Charles E. Browning – KL 524 | Dr. C. William Lee – KL 508 |
| Dr. Amy Ciric – KL 521 | Dr. Chris Muratore – KL 508 |
| Dr. Kristen Comfort – KL 524 | Dr. Kevin Myers – KL 524 |
| Dr. Don Comfort – KL 508 | Dr. Jennifer Reid – KL 542 |
| Dr. Matthew J. Dewitt | Dr. Sarwan S. Sandhu – KL 508 |
| Dr. Michael Elsass – KL 524 | Dr. Tony Saliba – KL 542 |
| Dr. Erin Gibbemeyer – KL 542 | Dr. Erick Vasquez – KL 508 |
| Dr. Ryan Justice | Dr. Robert Wilkens – KL 564 |
| Dr. Khalid Lafdi – KL 542 | Dr. Zachary West |

# Information for the New Chemical Engineering Student

Information we know you will find useful

* Enrichment Workshops

These workshops are conducted for 2 hours every evening and are staffed by upper class engineering students (as well as monitored by a faculty member). They provide a means for engineering students to work in a collaborative learning environment with other first-year students and provide an opportunity to interact with upper class engineering students. This is a good way to exchange information, ideas, and sort out problems with respect to courses - in particular calculus, physics, and chemistry.

* If you fall behind in a course

When you first become aware that you are falling behind in a course, you should immediately see your instructor to arrange for extra help. All faculty members maintain office hours so as to be available to students, but you must take the initiative in asking for help. You are now in a professional course of study and you have a responsibility to yourself to get the best education you possibly can.

* Office of Learning Resources (OLR)

Learning occurs both inside and outside the classroom, in formal and informal, individual and group settings, and in different ways for different people. It is influenced by attitude and motivation, by pedagogy, by environment (space, time, lighting, sound), by learning habits and preferences.

The Ryan C. Harris Learning Teaching Center's Office of Learning Resources is a learning resource for students, parents, faculty, and staff at the University of Dayton. OLR offers a wide variety of information and services to help everyone become a successful learner. Peruse the web site, attend one of our offerings, or contact our office and meet with a staff member. OLR provides valuable services to facilitate better learning and academic strategies.

* Academic Regulations

Review the academic regulations of the University of Dayton including the academic honor code. Information can be found at <http://catalog.udayton.edu/undergraduate/generalinformation/academicinformation/>

* Community Standards and Civility

The Office of Community Standards and Civility administers the Codes of Conduct of the University of Dayton. Our primary focus is on helping students learn from the consequences of their actions and become a positive influence within the University of Dayton community and beyond. The handbook is available in English, Chinese, and Arabic. <https://www.udayton.edu/studev/dean/civility/index.php>

# Get Involved

The University of Dayton has many student organizations that can be professional, social or both. The organizations listed below high a high number of chemical engineering majors participate.

* American Institute of Chemical Engineers (AIChE)

The student branch of the American Institute of Chemical Engineers actively participates in student activities such as Engineers' Week and social events. Industrial speakers and plant tours help familiarize the chemical engineering student with professional opportunities after graduation. Contact the departmental office at 229-2627 or in Kettering Lab Room 524 to get additional information.

* Society for the Advancement of Materials and Process Engineering (SAMPE)

Contact the CME department office in Kettering Lab 524 or 229-2627 to get contact information.

* Society for Women Engineers (SWE)

Holds regular meetings to develop the professional and social skills of the members though social activities, speakers and workshops. Contact Beth Hart, Kettering Lab Room 261 for further details. Their web address www.udayton.edu/~swe/

* Tau Nu Kappa

Tau Nu Kappa is an honorary for students involved in different engineering organizations. To qualify, students must be involved in at least two engineering activities, some of which are listed above. Their web address www.udayton.engr.udayton.edu/stud for additional information.

* Tau Beta Pi

Tau Beta Pi is the National Honor Society for engineers in all disciplines. Academic standing during the junior and senior years determines eligibility. Students are notified of their eligibility each semester. Activities include tutoring, socials, and service events. Their web address is www.udayton.edu/~tbp/ for additional details.

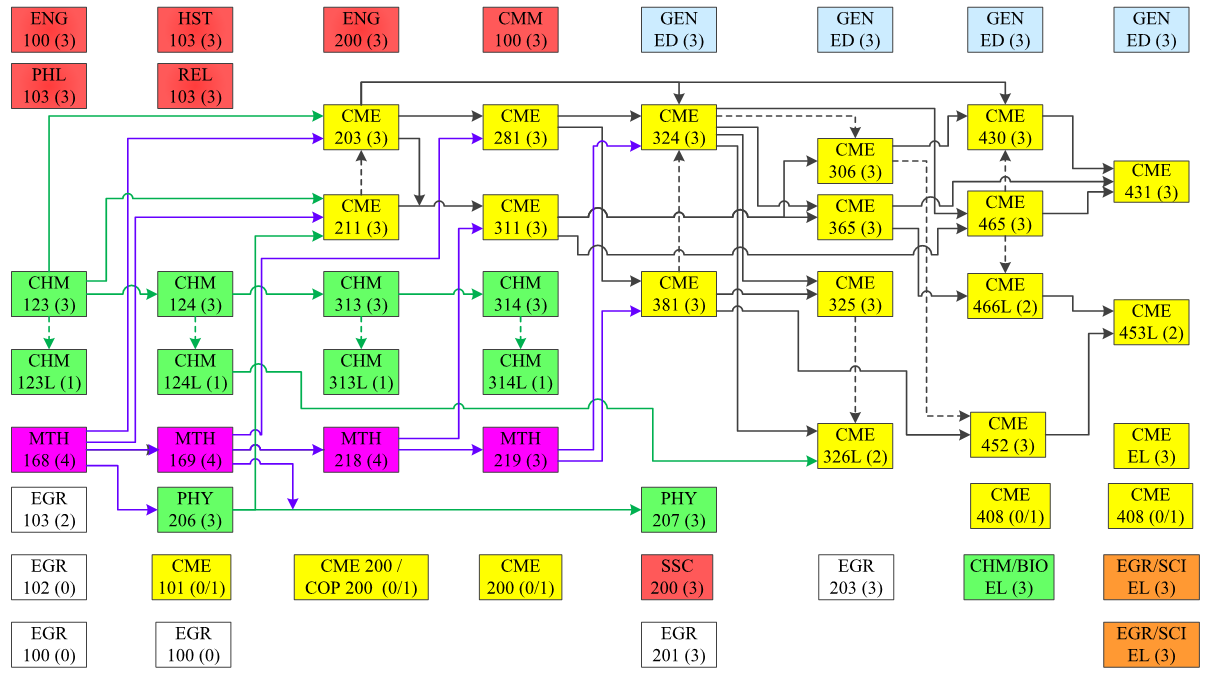
* Christmas on Campus - (COC)

Each year UD students host approximately 1,300 City of Dayton Children for an evening of fun, food, and entertainment. On or about December 8, the event is put into action with the annual house-decorating contest in the Student Neighborhood. The COC committee is composed of student volunteers who work to plan and implement this event. Contact the Office of Student Development to get involved. Their web address is www.udayton.edu/~coc/ for additional details. Check with the Office of Student Development and UD's web site to see what else is available. The University of Dayton web site is located at www.udayton.edu. The web page address for the Office of Student Activities is [www.udayton.edu/~studact/](http://www.udayton.edu/~studact/).

* Community Service Opportunities

List of Community Services Opportunities <https://www.udayton.edu/studev/dean/civility/community_service.php>

# Chemical Engineering Flow Chart



**UNIVERSITY OF DAYTON - SCHOOL OF ENGINEERING**

**Program - Bachelor of Chemical Engineering Total: 137 Credit Hours**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Dept. No. | Course | Credit Hours | |
| FIRST YEAR | EGR 102 | Introduction to the University School of Engineering | 0 | |
| CHM 123-124 | General Chemistry I, II & Labs | 8 | |
| CME 101 | Introduction to Chemical Engineering | 1 | |
| MTH 168-169 | Analytic Geometry & Calculus I, II | 8 | |
| PHY 206 | General Physics I | 3 | |
| EGR 103 | Engineering Innovation | 2 | |
| ENG 100 | Writing Seminar I | 3 | |
| HST 103 | The West and the World | 3 | |
| REL 103 | Introduction to Religious and Theological Studies | 3 | |
| PHL 103 | Introduction to Philosophy | 3 | |
| EGR 100 | Engineering Workshops | 0 | |
|  |  |  | 34 | |
|  |  |  |  |  |
|  |  |  | 1ST Term | 2nd Term |
| SECOND YEAR | CHM 313-314 | Organic Chemistry I, II & Labs | 3-3-4 | 3-3-4 |
| CME 200 | Professional Development Seminar | 1-0-0 | 1-0-1 |
| CME 203 | Material & Energy Balances | 3-0-3 |  |
| ENG 200 | Writing Seminar II | 3-0-3 |  |
| CME 211 | Introduction to Thermodynamics for CME | 3-0-3 |  |
| MTH 218 | Analytic Geometry and Calculus III | 4-0-4 |  |
| CME 281 | Chemical Engineering Computations |  | 3-0-3 |
| CME 311 | Chemical Engineering Thermodynamics |  | 3-0-3 |
| MTH 219 | Applied Differential Equations |  | 3-0-3 |
| CMM 100 | Fundamentals of Communication | \_\_\_\_\_\_ | 3-0-3 |
|  |  |  | 17 | 17 |
|  |  |  |  |  |
| THIRD YEAR | CME 324-325 | Transport Phenomena I, II | 3-0-3 | 3-0-3 |
| CME 381 | Applied Mathematics for Chemical Engineers | 3-0-3 |  |
| EGR 201 | Engineering Mechanics | 3-0-3 |  |
| PHY 207 | General Physics II | 3-0-3 |  |
| XXX.XXX | General Education Course | 3-0-3 |  |
| SSC 200 | Social Science Integrated | 3-0-3 |  |
| CME 306 | Chemical Reaction Kinetics and Engineering |  | 3-0-3 |
| CME 326L | Transport Phenomena Laboratory |  | 1-3-2 |
| CME 365 | Separation Techniques |  | 3-0-3 |
| EGR 203 | Electrical & Electronic Circuits |  | 3-0-3 |
| XXX.XXX | General Education Course | \_\_\_\_\_\_ | 3-0-3 |
|  |  |  | 18 | 17 |
|  |  |  |  |  |
| FOURTH YEAR | CME 408 | Seminar | 0/1 | 0/1 |
| BIO/CHM | Biology/Chemistry Elective | 3-0-3 |  |
| CME 430-431 | Chemical Engineering Design I, II | 3-0-3 | 3-0-3 |
| CME 452 | Process Control | 3-0-3 |  |
| CME 465 | Flow & Heat Transfer Processes | 3-0-3 |  |
| CME 466L | Chemical Engineering Unit Operations Laboratory | 0-5-2 |  |
| XXX.XXX | General Education Course | 3-0-3 |  |
| CME 453L | Process Control Laboratory |  | 0-5-2 |
| CME XXX | Chemical Engineering Elective1 |  | 3-0-3 |
| XXX.XXX | Engineering/Science Elective1 |  | 3-0-3 |
| XXX.XXX | Engineering/Science Elective1 |  | 3-0-3 |
| XXX.XXX | General Education Course | \_\_\_\_\_\_ | 3-0-3 |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | 18 | 17 |

1Selected from list approved by the Department of Chemical and Materials Engineering

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CAP Requirements  *EACH ROW AND COLUMN*  *MUST HAVE AN “X”*  SUBJECT COURSE | | Faith  Traditions | Practical  Ethical Action | Inquiry | Integrative | Diversity/  Social Justice |
| Arts |  |  |  |  |  |  |
| PHL/REL |  |  |  |  |  |  |
| PHL/REL |  |  |  |  |  |  |
| History |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

# Chemical Engineering Typical Schedule of Courses Offerings

## Undergraduate Courses

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Course | Hours | Fall | Spring | Summer |
| Introduction to Chemical Engineering | 0/1 |  | CME 101 |  |
| Professional Development Seminar | 0/1 | CME 200 | CME 200 |  |
| Material & Energy Balances | 3 | CME 203 | CME 203 |  |
| Introduction to Thermodynamics | 3 | CME 211 | CME 211 |  |
| Chemical Engineering Computations | 3 |  | CME 281 | CME 281 |
| Chemical Reaction Kinetics & Engineering | 3 |  | CME 306 | CME 306 |
| Chemical Engineering Thermodynamics | 3 |  | CME 311 | CME 311 |
| Transport Phenomena I | 3 | CME 324 | CME 324 |  |
| Transport Phenomena II | 3 |  | CME 325 | CME 325 |
| Transport Phenomena Laboratory | 2 |  | CME 326L | CME 326L |
| Separation Techniques | 3 |  | CME 365 | CME 365 |
| Advanced Mathematics | 3 | CME 381 | CME 381 |  |
| Senior Seminar | 0/1 | CME 408 | CME 408 |  |
| Advanced Composites | 3 |  |  |  |
| Chemical Engineering Design I | 3 | CME 430 |  |  |
| Chemical Engineering Design II | 3 |  | CME 431 |  |
| Chemical Product Design | 3 |  |  | CME 432 |
| Process Control | 3 | CME 452 |  |  |
| Process Control Lab | 2 |  | CME 453L |  |
| Fluid Flow and Heat Transfer | 3 | CME 465 |  |  |
| Unit Operations Lab | 2 | CME 466L |  |  |

\* Offered on as needed basis

\*\* Offered in alternate years

# Guide to Math, Science, and Chemical Engineering Course Prerequisites

|  |  |  |  |
| --- | --- | --- | --- |
| Course | Prerequisite | Co-Requisite | Prerequiste for |
| CHM 123 | High School Chemistry |  | CHM 124, CME 203, CME 211 |
| CHM 123L |  | CHM 123 | CHM 124L |
| MTH 168 | MTH 116 or equivalent |  | CME 203, CME 211, MTH 169 |
| CHM 124 | CHM 123 |  | CHM 313 |
| CHM 124L | CHM 123L | CHM 124 | CHM 313L, CME 326L |
| MTH 169 | MTH 168 |  | CME 281, MTH 218, PHY 207 |
| PHY 206 |  | MTH 168 | CME 211, PHY 207 |
| CME 203 | CHM 123, MTH 168 | CME 211 | CME 281, CME 311, CME 430 |
| CME 211 | CHM 123, MTH 168, PHY 206 |  | CME 311 |
| CHM 313 | CHM 124 |  | CHM 314 |
| CHM 313L | CHM 124L | CHM 313 | CHM 314L |
| MTH 218 | MTH 169 |  | CME 311, MTH 219 |
| CME 281 | CME 203, MTH 169 |  | CME 324, CME 381 |
| CME 311 | CME 203, CME 211, MTH 218 |  | CME 365, CME 465 |
| CHM 314 | CHM 313 |  |  |
| CHM 314L | CHM 313L | CHM 314 |  |
| MTH 219 | MTH 218 |  | CME 324, CME 381 |
| CME 324 | CME 203, CME 281, MTH 219 | CME 381 | CME 365, CME 325, CME 326L, CME 465 |
| CME 381 | CME 281, MTH 219 |  | CME 325, CME 452 |
| PHY 207 | MTH 169, PHY 206 |  |  |
| CME 306 | CME 311 | CME 324 | CME 430 |
| CME 365 | CME 311, CME 324 |  | CME 431, CME 466L |
| CME 325 | CME 324, CME 381 |  |  |
| CME 326L | CHM 124L, CME 324 | CME 325 |  |
| CME 430 | CME 203, CME 306 | CME 465 | CME 431 |
| CME 465 | CME 311, CME 324 |  | CME 431 |
| CME 466L | CME 365 | CME 465 | CME 453L |
| CME 452 | CME 381 | CME 306 | CME 453L |
| CME 408 |  | CME 430 |  |
| CME 431 | CME 365, CME 430, CME 465 |  |  |
| CME 453L | CME 452, CME 466L  or instructor permission |  |  |

# Academic Calendar 2016-2017

FALL 2016

Sat, Aug 20 Incoming First Year students move into UD Housing

Sat-Tue, Aug 20-23 New Student Orientation

Sun, Aug 21 Upper-class students move into UD Housing

Tue, Aug 23 New Student Convocation

Tue, Aug 23 Last day to complete registration

**Wed, Aug 24 Classes begin at 8:00 a.m.**

**Tue, Aug 30 Last day for late registration, change of grading options and schedules**

Mon, Sep 5 Labor Day--no classes

**Wed, Sep 14 Last day to drop classes without record**

Fri, Sep 23 Academic Senate Meeting- KU Ballroom

Wed, Oct 5 Mid-Term Break begins after last class

Mon, Oct 10 Classes resume at 8:00 a.m.

Fri, Oct 14 Academic Senate Meeting- KU Ballroom

Sat, Oct 15 Last day for Graduate and Doctoral students to apply for December 2016 graduation

Wed, Oct 19 First-Year students' midterm progress grades due by 4:00 p.m.

Tue, Nov 1 Last day for Undergraduate students to apply for May 2017 graduation

Fri-Sun, Nov 4-6 Family Weekend

Fri, Nov 11 Academic Senate Meeting- KU Ballroom

**Mon, Nov 14 Last day to drop classes with record of W**

Tue, Nov 22 Thanksgiving recess begins after last class

Sat, Nov 26 Saturday classes meet

Mon, Nov 28 Classes resume at 8:00 a.m.

Thu, Dec 8 Feast of the Immaculate Conception/Christmas on Campus--no classes

Fri, Dec 9 Last day of classes

Fri, Dec 9 Academic Senate Meeting- KU Ballroom

Sat, Dec 10 Study Day

Sun, Dec 11 Study Day

Mon-Fri, Dec 12-16 Exams--Fall Term ends after final examinations

Fri, Dec 16 University Housing closes for Christmas Break at 6:00 p.m.

Sat, Dec 17 Diploma Exercises at 9:45 a.m.

Tue, Dec 20 Grades due by 9:00 a.m.

Thu, Dec 22 End of Term processing officially complete

Mon, Jan 23 Last day to change Fall Term grades

CHRISTMAS BREAK

Sun, Dec 18 Christmas Break begins

Mon, Jan 16 Christmas Break ends

SPRING 2017

Fri, Jan 13 Last day to complete registration

Sun, Jan 15 University Housing reopens for Spring Term at 8:00 a.m.

**Tue, Jan 17 Classes begin at 8:00 a.m.**

Fri, Jan 20 Academic Senate Meeting

**Mon, Jan 23 Last day for late registration, change of grading options and schedules**

Mon, Jan 23 Last day to change Fall Term grades

Wed, Feb 1 Last day for Graduate and Doctoral students to apply for May 2017 graduation

Fri, Feb 3 Academic Senate/Faculty Meeting- KU Ballroom

**Mon, Feb 6 Last day to drop classes without record**

Fri, Feb 17 Academic Senate Meeting- KU Ballroom

Wed, Mar 1 Spring Break begins after last class

Thu, Mar 2 Thursday only Graduate classes meet

Mon, Mar 6 Classes resume at 8:00 a.m.

Wed, Mar 15 Last day for Undergraduate students to apply for August 2017 graduation

Wed, Mar 15 First-Year students' midterm progress grades due by 4:00 p.m.

Fri, Mar 17 Academic Senate Meeting- KU Ballroom

Sat, Apr 1 Last day for Undergraduate students to apply for December 2017 graduation

Wed, Apr 5 Bro. Joseph W. Stander Symposium-Alternate Day of Learning

**Mon, Apr 10 Last day to drop classes with record of W**

Wed, Apr 12 Easter Recess begins after last class

Mon, Apr 17 Easter Monday--no day classes--classes resume at 4:30 p.m.

Fri, Apr 21 Academic Senate Meeting- KU Ballroom

Fri, Apr 28 Last day of classes

Sat, Apr 29 Study Day

Sun, Apr 30 Study Day

Mon-Fri, May 1-5 Exams--Spring Term ends after final examinations

Fri, May 5 University Housing closes for Spring Term at 6:00 p.m.

Sat, May 6 Doctoral/Graduate Commencement Exercises at 12:45 pm

Sun, May 7 Undergraduate Commencement Exercises at 9:45 a.m.

Tue, May 9 Grades due by 9:00 a.m.

Thu, May 11 End of Term processing officially complete

Mon, Jun 12 Last day to change Spring Term grades

SUMMER 2017 - FIRST SESSION

Fri, May 12 Last day to complete registration

Sat, May 13 Saturday classes begin

Mon, May 15 Classes begin at 8:00 a.m.

**Tue, May 16 Last day for late Summer Term-First Session registration, change of grading options and schedules**

**Thu, May 18 Last day for late full Summer Term registration, change of grading options and schedules**

**Wed, May 24 Last day to drop without record from First Session classes**

Mon, May 29 Memorial Day--no classes

**Mon, Jun 5 Last day to drop without record from full Summer Term classes**

**Mon, Jun 12 Last day to drop with record of W from First Session classes**

Mon, Jun 12 Last day to change Spring Term grades

Fri-Sat, Jun 23-24 Exams--full Summer Term classes do not meet. First Session ends after final examinations

Tue, Jun 27 Grades due by 9:00 a.m.

Thu, Jun 29 End of Term processing officially complete

Sat, Jul 1 Last day for Graduate and Doctoral students to apply for August 2017 graduation

Thu, Jul 27 Last day to change First Session grades

SUMMER 2017 - SECOND SESSION

Fri, Jun 23 Last day to complete registration

Sat, Jun 24 Saturday classes begin

Mon, Jun 26 Second Session classes begin

**Tue, Jun 27 Last day for late Summer Term-Second Session registration, change of grading options and schedules**

Sat, Jul 1 Last day for Graduate and Doctoral students to apply for August 2017 graduation

Tue, Jul 4 Independence Day--no classes

**Fri, Jul 7 Last day to drop without record from Second Session classes**

**Mon, Jul 17 Last day to drop with record of W from Second Session and full Summer Term classes**

Thu, Jul 27 Last day to change First Session grades

Fri-Sat, Aug 4-5 Exams--Second Session and full Summer Term end after final examinations

Mon, Aug 7 Degrees conferred--no ceremony

Tue, Aug 8 Grades due by 9:00 a.m.

Thu, Aug 10 End of Term processing officially complete

Mon, Sep 11 Last day to change Second Session and full Summer Term grades

# Common Academic Program

The University of Dayton created the Common Academic Program (CAP) to address the learning needs of students who will be leaders in the 21st Century. As leaders, graduates must respond well to rapid and sometimes dramatic changes in society and the workplace, a need the CAP addresses through engaging and informative introductions to a range of academic disciplines which students critique and synthesize. University of Dayton students will prepare for the future by applying knowledge, skills and values to real life experiences, through broad exploration, by linking theory and creative thought with practice, and through integrative involvement. Experiences at the University of Dayton will enable graduates to be recognized for their outstanding abilities and their meaningful contributions to the workplace and society.

Five Primary Characteristics Guide the Common Academic Program

1. First, the CAP intentionally sequences courses so that over time students build knowledge of and expertise in understanding, analyzing, and demonstrating the seven central learning goals and outcomes.
2. Second, it calls on students to integrate what they learn by requiring them to take courses which intentionally cross disciplinary boundaries and incorporate relevant non-classroom experiences.
3. Third, the CAP emphasizes assessment of student learning to guide continual course improvement.
4. Fourth, students are engaged through application of knowledge in learning centered tasks.
5. Finally, professional and vocational learning opportunities are expansive and include skills valued by employers: communication, decision-making, and critical thinking.

## Student Learning Outcomes of the Common Academic Program

1. **Scholarship**: All undergraduates will develop and demonstrate advanced habits of academic inquiry and creativity through the production of a body of artistic, scholarly or community-based work intended for public presentation and defense
2. **Faith traditions**: All undergraduates will develop and demonstrate ability to engage in intellectually informed, appreciative, and critical inquiry regarding major faith traditions. Students will be familiar with the basic theological understandings and central texts that shape Catholic beliefs and teachings, practices, and spiritualties. Students’ abilities should be developed sufficiently to allow them to examine deeply their own faith commitments and also to participate intelligently and respectfully in dialogue with other traditions.
3. **Diversity**: All undergraduates will develop and demonstrate intellectually informed, appreciative, and critical understanding of the cultures, histories, times, and places of multiple others, as marked by class, race, gender, ethnicity, religion, nationality, sexual orientation, and other manifestations of difference. Students’ understanding will reflect scholarly inquiry, experiential immersion, and disciplined reflection.
4. **Community**: All undergraduates will develop and demonstrate understanding of and practice in the values and skills necessary for learning, living, and working in communities of support and challenge. These values and skills include accepting difference, resolving conflicts peacefully, and promoting reconciliation; they encompass productive, discerning, creative, and respectful collaboration with persons from diverse backgrounds and perspectives for the common purpose of learning, service, and leadership that aim at just social transformation. Students will demonstrate these values and skills on campus and in the Dayton region as part of their preparation for global citizenship
5. **Practical wisdom**: All undergraduates will develop and demonstrate practical wisdom in addressing real human problems and deep human needs, drawing upon advanced knowledge, values, and skills in their chosen profession or major course of study. Starting with a conception of human flourishing, students will be able to define and diagnose symptoms, relationships, and problems clearly and intelligently, construct and evaluate possible solutions, thoughtfully select and implement solutions, and critically reflect on the process in light of actual consequences.
6. **Critical evaluation of our times**: Through multidisciplinary study, all undergraduates will develop and demonstrate habits of inquiry and reflection, informed by familiarity with Catholic Social Teaching, that equip them to evaluate critically and imaginatively the ethical, historical, social, political, technological, economic, and ecological challenges of their times in light of the past.
7. **Vocation**: Using appropriate scholarly and communal resources, all undergraduates will develop and demonstrate ability to articulate reflectively the purposes of their life and proposed work through the language of vocation. In collaboration with the university community, students’ developing vocational plans will exhibit appreciation of the fullness of human life, including its intellectual, ethical, spiritual, aesthetic, social, emotional, and bodily dimensions, and will examine both the interdependence of self and community and the responsibility to live in service of others.

# MINORS

## School of Engineering Minors

Specialization has become an increasingly important aspect of engineering practice. It is often advantageous for School of Engineering graduates to have both a balanced education in one of the traditional disciplines and specialized training in a specific area complementary to that discipline.

In recognition of this trend, the School of Engineering has a program of minors which, in some cases, may be pursued throughout the existing electives of your current engineering curriculum. The minors program serves the needs of the student by providing options which open avenues of study to fulfill specific educational goals/career objectives.

Election of a minor is strictly at the student’s option and does not affect the present credit hour requirements for graduation. This is typically done at the **beginning of the student’s junior year**. There is no penalty for discontinuing a minor program of study provided the unfulfilled balance of free and technical electives are taken in accordance with current degree requirements. Successful completion of a minor will be recorded by its formal title on the student’s official transcript.

A minor consists of at least 12 semester hours of coursework sequenced such that the program of study can be completed in the third and fourth years of study. The first course in each minor will usually satisfy any prerequisite requirements for subsequent courses in that minor. Moreover, the first course will usually provide the necessary technical background needed by those students entering the program from other engineering disciplines. The courses in a minor are taken for **undergraduate credit**, grading option 1 only. **Courses required for the minor may not be offered every term**.

To designate a minor, the ***Request for Approval of a Minor***form, page 49 of this booklet is available in the Office of the Dean of Engineering (KL 564), and should be completed by the student and signed by the chair of the School of Engineering department offering the minor. The form should then be submitted to the Office of the Dean, KL 564. When the minor has been successfully completed, the dean will notify the Registrar’s Office, and the minor will become a part of the student’s permanent record. In some instances, it may be beneficial to the student to substitute courses in an approved minor program. Such changes can be submitted on the ***Request for Approval of a Minor*** form and must be approved by the student’s advisor, appropriate department chairperson, and the dean.

Detailed descriptions of the School of Engineering minors are provided in this brochure. It is anticipated that additional minors will evolve on a continuing basis from faculty student endeavors. A special minor, not listed, can be created with the approval of the advisor, the chairperson offering the minor, and the School of Engineering Academic Committee.

## Minors outside School of Engineering

An undergraduate student who wishes to complete a minor in an area outside of the School of Engineering may do so by completing the courses selected by the department offering the minor. In addition to the 12 semesters there will likely be additional prerequisite courses. Information about this minor must be researched by the student. Some information can be found online but it may also be recommended to go to the department offering the minor to find out additional information. For example a Minor in Art can be very time consuming with all the time required to devote to projects. Students must consult with their academic advisor to discuss these minors as soon as possible.

## Minors Related to Chemical and Materials Engineering

For a complete list of minors, please refer to:

<http://www.udayton.edu/engineering/areas_of_study.php>

As part of the requirements for the CME degree, the following electives can be used to satisfy a minor.

Chemistry/Biology Elective 3 credit hours

Chemical Engineering Elective 3 credit hours

Engineering/Science Elective 3 credit hours

Engineering/Science Elective 3 credit hours

### Bioengineering (BIE)

Description: This is open to chemical, civil, computer, electrical, and mechanical engineering majors. The program is designed to expose the student to the use of engineering principles in the biological systems and applications.

**Two required courses:**

BIO 151 Concepts of Biology I -**OR**-

BIO 152 Concepts of Biology II

CME 490/590 Introduction to Bioengineering

**Select one course from:**

CME 491/591 Biomedical Engineering

MEE 530 Biomechanical Engineering

**One of the following electives:**

BIO 151 Concepts of Biology I

BIO 152 Concepts of Biology II

BIO 312 General Genetics

BIO 403 Physiology I

BIO 411 General Microbiology

BIO 440 Cell Biology

CHM 420 Biochemistry

CHM 451 General Biochemistry I

CHM 452 General Biochemistry II

CME 491/591 Biomedical Engineering

CME 492 Chemical and Bio Sensors

MEE 530 Biomechanical Engineering

### Energy Production Engineering

Description: This minor is open to other engineering majors. The minor is for students with an interest in energy production.

Students receiving a minor in Energy Production Engineering will be required to take four required courses from the list below:

CME486/586 Introduction to Petroleum Engineering

CME 533/BIE 533/RCL 533 Biofuel Production Processes

CME 524/MEE 524/RCL 524 Electrochemical Power

CHM 234/GEO 234 Energy Resources

MEE 473/573/RCL 573 Renewable Energy Systems

MAT 579 Materials for Advanced Energy Applications

ECE 316 Introduction to Electrical Energy Systems

RCL 590 Thermal Systems Analysis

RCL 590 Solar Energy Engineering

RCL 590 Wind Energy Engineering

ECE/RCL 583 Advanced Photovoltaics

Composite Materials Engineering (CMA)

Description: This minor is open to civil, chemical, and mechanical engineering majors. The program is designed to expose the student to the design, processing, and characterization of composite materials and their various applications in industry.

Students receiving a Composite Materials Engineering Minor will be required to take four courses total – two required courses and two electives. The required courses and electives are listed below.

**Two Required Courses:**

CME/MAT 510 High Performance Thermostat Polymers

CME 512/MAT 542 Advanced Composite Materials and Processing

**Choose two electives from the list below:**

CME/MAT 509 Introduction to Polymer Science - Thermoplastics

CME/MAT 527 Methods of Polymer Analysis

CEE/MAT 540 Composite Design

CEE/MEE 546 Finite Element Analysis I

CEE/MAT 543 Analytical Mechanical-Composite Materials

CME/MAT 580 Polymer Decomposition, Degradation, and Durability

### Environmental Engineering (EVE)

Description: This minor, which is open to all non-civil engineering majors. The program defines contemporary problems of pollution and identifies the technological approaches necessary to preserve the quality of our environment.

Any four of the following not already required. It is recommended the minor include one course pertaining to water, air, and solid.

CEE 434 Water & Wastewater Engineering

CME/CEE 562 Physical & Chemical Water & Wastewater Treatment Processes

CME/CEE 563 Hazardous Waste Engineering

CME/CEE 564 Solid Waste Engineering

CME 565 Fundamentals of Combustion

CME/CEE 574 Fundamentals of Air Pollution Engineering I

CME/CEE 575 Fundamentals of Air Pollution Engineering II

CME/CEE 576 Environmental Engineering Separation Processes

CHM 341 Environmental Chemistry

### Materials Engineering (MAT)

Description: This minor is open to all engineering majors. This minor is a general overview of materials with elective courses in polymers, composites, nanomaterials, and material characterization.

Students receiving a Materials Engineering Minor will be required to take four courses total – two required courses and two electives. The required courses and electives are listed below.

**Two Required Courses:**

MAT 501 Principles of Materials I

MAT 502 Principles of Materials II

**Choose two electives from the list below:**

MAT 504 Techniques of Materials Analysis

MAT 506 Mechanical Behavior of Materials

MAT 507 Introduction to Ceramic Materials

MAT 508 Principles of Material Selection

CME 509/MAT 509 Introduction to Polymer Science - Thermoplastics

CME 510/MAT 510 High Performance Thermostat Polymers

CME/MAT 511 Principles of Corrosion

MAT 521 Nondestructive Evaluation

CME/MAT 527 Methods of Polymer Analysis

CME/MAT 528 Chemical Behavior of Materials

CME 512/MAT 542 Advanced Composites

MAT 535 High Temperature Materials

MAT 541 Experimental Mechanics of Composite Materials

MAT 543 Analytical Mechanics of Composite Materials

MAT 544 Mechanics of Composite Structures

MAT 575 Fracture and Fatigue of Metals and Alloys I

MAT 577 Light Structural Metals

CME/MAT 579 Materials for Advanced Energy Applications

CME/MAT 580 Polymer Durability

MAT 595 Special Problems in Materials Engineering

MAT 601 Surface Chemistry of Solids

MAT 604 Nanostructured Materials

MEE 312 Engineering Materials I

### Polymer Materials (PME)

Description: This minor is open to all engineering majors. Coverage of polymers including thermosets and thermoplastics and composite materials in which polymers are used as constituents. Methods of polymer processing and polymer characterization are also included.

Students receiving a Polymer Materials Minor will be required to take four courses total – two required courses and two electives. The required courses and electives are listed below

**Two Required Courses:**

CME/MAT 509 Introduction to Polymer Science – Thermoplastics

CME/MAT 510 High Performance Thermostat Polymers

**Select two of the following courses:**

CME/MAT 527 Methods of Polymer Analysis

CME/MAT 528 Chemical Behavior of Materials

MAT 540 Composite Design

CME 512/MAT 542 Advanced Composites

MAT 543 Analytical Mechanics of Composite Materials

CME/MAT 580 Polymer Durability

### MBA-Ready Program

The MBA Ready program is available to Engineering students and satisfies all the prerequisite material that is need to get a Masters in Business Administration. By completing the MBA Ready program students also receive a minor in Business Administration. For more information click [here](https://www.udayton.edu/engineering/departments/mechanical_and_aerospace/resources/pdfs/mee_ug/mba_ready_program_requirements_engineering1.pdf).

To apply to the MBA-Ready program go to: <https://www.udayton.edu/business/academics/advising/online_forms.php>

Scroll down to the link for the MBA Ready application. Follow the directions to fill out the form. Students should have a minimum cumulative GPA of a 3.0 to apply.

Contact Jamie Riley with any further questions regarding the MBA Ready program.

Jamie Riley

Miriam Hall 108

937-229-2065

[Jriley1@udayton.edu](mailto:Jriley1@udayton.edu)

ECO 203 Principles of Microeconomics 3.0 Cr. Hrs.

ACC 300A Principles of Financial Accounting 1.5 Cr. Hrs.

ACC 300B Principles of Managerial Accounting 1.5 Cr. Hrs.

FIN 301 Introduction to Financial Management 3.0 Cr. Hrs.

MGT 301 Organizational Behavior 3.0 Cr. Hrs.

MBA 611 Statistical Analysis for Business Decisions 1.5 Cr. Hrs.

MBA 612 Principles of Operations Management 1.5 Cr. Hrs.

MBA 630 Principles of Marketing 1.5 Cr. Hrs.

MBA 660 Principles of Information Systems 1.5 Cr. Hrs.

### Concentration in Energy Systems

Description: The Energy Systems Concentration provides an interdisciplinary concentration in energy systems and its social consequences. Students completing this concentration would find themselves prepared for jobs in both industrial and building energy systems, the market for which has been growing rapidly.

Students in the Energy Systems Concentration would be required to take the following courses:

**Core CME Courses**

CME 203 Materials and Energy Balances

CME 311 Chemical Engineering Thermodynamics

CME 324/325/326L Transport Phenomena I, II and lab

CME 465 Fluid Flow and Heat Transfer

CME 466L Unit Operations Lab

CME 430/431 Design I and II

**CME Elective** (Choose 1 from the list below)

CME 486/586 Petroleum engineering

CME 524/MEE 575 Fundamentals and Applications of Fuel Cells

CME 565 Fundamentals of Combustion

CME 574 Fundamentals of Air Pollution Engineering I

**Technical Electives** (Choose 2 of the following if not chosen for CME elective)

CME 486/586 Petroleum engineering

CME 524/MEE 575 Fundamentals and Applications of Fuel Cells

CME 565/MEE 560 Fundamentals of Combustion

CME 574 Fundamentals of Air Pollution Engineering

MAT 590 Energy Materials

MEE 420/569 Energy Efficient Buildings

MEE 471/571 Design of Thermal Systems

MEE 474/574 Energy Efficient Manufacturing

MEE 472/572 Renewable Energy Systems

CME 507/MEE 511 Advanced Thermodynamics

MEE 413/513 Propulsion

AEE/MEE 565 Advanced Propulsion Systems

MEE 590 Aviation and Jet Fuels

The students must in addition to an Ethics course take **ASI 320** Cities and Energy (satisfies History requirement) or other approved humanities elective connected to Energy Systems

## Pre-Med Preparation for Engineering Students:

Chemical Engineering students interested in Medical School can structure their curriculum to accommodate pre-med preparation. It is recommended that you meet with you major academic advisor as soon as possible and with a pre-med advisor.

The courses required by the majority of medical schools include:

Note: See a pre-med adviser for further approval

BIO 151 and 151L Concepts of Biology I: Cell and Molecular Biology and Lab 4 Cr. Hrs.

BIO 152 and 152L Concepts of Biology II: Evolution and Ecology and Lab 4 Cr. Hrs.

CHM 123 and 123L\* General Chemistry I and Lab 4 Cr. Hrs.

CHM 124 and 124L\* General Chemistry II and Lab 4 Cr. Hrs.

PHY 206\* General Physics I 3 Cr. Hrs.

PHY 207\* General Physics II 3 Cr. Hrs.

PHY 201L\* General Physics Laboratory 1 Cr. Hr.

(A higher level engineering lab may be substituted.)

CHM 313 and 313L\* Organic Chemistry I and Lab 4 Cr. Hrs.

CHM 314 and 314L\* Organic Chemistry II and Lab 4 Cr. Hrs.

2 semesters of ENG\* Take CAP Art study ENG if took ENG 200H 3 Cr. Hrs.

\* Already part of the CME sequence

Classes that should be completed before taking the MCAT:

BIO 403 Physiology 3 Cr. Hrs.

BIO 411 General Microbiology 3 Cr. Hrs.

BIO 462 Molecular Biology 3 Cr. Hrs.

CHM 420 Biochemistry 3 Cr. Hrs.

PSY 101 Introduction to Psychology 3 Cr. Hrs.

SOC 101 Introduction to Sociology 3 Cr. Hrs.

It is recommended that a student an additional course from below.

BIO 312 General Genetics 3 Cr. Hrs.

BIO 415 Neurobiology 3 Cr. Hrs.

BIO 440 Cell Biology 3 Cr. Hrs.

BIO 475 Human Anatomy 3 Cr. Hrs.

BIO 427 Immunology 3 Cr. Hrs.

CHM 427 Medical Chemistry 3 Cr. Hrs.

# Modify/Waive Form Process

MODIFY FORMS:

1. Student discusses with advisor or department chair the courses to be modified.
2. Student completes the modify form and submits it to the department chair for approval and signature. The department makes copy of signed form for office file.
3. Original signed modify form is submitted to the Dean’s Office.
4. Student’s Degreeworks is run and submitted to the Associate Dean with the original modify form.
5. Associate Dean reviews submitted modify form with advising report and approves or provides other instruction on the form.
6. If the form is approved by the Associate Dean then DegreeWorks will be updated. A copy of the approved, signed modify form is sent to the department for the student’s file.
7. If the form is not approved, a copy is made and kept in the Dean’s Office. The original form is returned to the department for review, update and resubmission.
8. The student, department chair, department admin., and Registrar Office are emailed of update on student’s file of approved changes. Student may view the change DegreeWorks website.
9. The original signed (approved) modify form is filed in the student’s file in the Dean’s Office.

WAIVE FORMS:

1. Student discusses with advisor or department chair the course to be waived.
2. Department chair creates and submits to the Dean’s Office the signed waive form with necessary documentation (if required). The department makes copy of signed form for office file.
3. Student’s Degreeworks is run and submitted to the Associate Dean with the waive form.
4. Associate Dean reviews submitted waive form with advising report and approves or provides other instruction on the form.
5. The Associate Dean signs waive form and returns to the Dean’s Office Admin. to be updated in DegreeWorks system.
6. A copy of the signed waive form is sent to the department.
7. If the form is not approved, a copy is made and kept in the Dean’s Office. The original form is returned to the department for review, update and resubmission.
8. The student, department chair, department admin., and Registrar Office are emailed of update on student’s file. Student may view the change on DegreeWorks website.
9. The original signed waive form is filed in student’s file in the Dean’s Office.

# Drop/Add Process with Registration

DROP/ADD FORMS: (See Academic Calendar for important dates needed for signatures)

1. Check the current term Academic Calendar for important dates:
   * Late Registration
   * Last day to DROP without record
   * Last day to DROP with a ‘W’
2. The student completes original drop/add form for course change(s). Fill out the three boxes at the top of the page.
3. The form is submitted to his/her advisor or department chair approval and signature.
4. Instructor signature is required during the ‘W’ Period and after the Add/Drop Date.
5. Chairperson signature is required for:
   * Closed/restricted class
   * Class permissions
   * Pre-requisite override
6. Associate Dean’s Signature is required:
   * After ‘W’ period
   * Registration over 18 hours
   * Grade Option change after Add/Drop Period
   * Complete Withdrawal
   * Pre-requisite override
7. After Add/Drop form has all required signatures take the form to the Flyer Student Services. All changes on the form will be completed by the Flyer Student Services.
8. The student may view their schedule on-line through Porches.

# Approved Technical Elective Classes

* Selection of technical electives is an important decision affecting minors and preparation for jobs and graduate school. Students are strongly advised to consult with a CME academic advisor to discuss the options and constraints that apply to their situation.
* Chemical Engineering courses, Engineering courses, Math and Science courses can be used as technical electives.
* The Engineering/Science classes can be used to complete a minor.
* Engineering Technology classes cannot be accepted as engineering/science requirement.
* Honors Thesis (CME 493 or CME 494) can be used as technical elective. Engineering Systems Design Seminar (EGR 320) cannot be used for an engineering/science requirement.
* **PHY 250 -** Descriptive Astronomy does not count as a technical elective.
* Most common classes taken by Chemical Engineering students are in bold letters. Pre-requisites to courses are in parentheses.

### Chemical Engineering Electives

**CME 409 Introduction to Polymer Science – Thermoplastics (CME 311, CHM 314)**

**CME 410 High Performance Thermoset Polymers (Organic Chemistry), permission of instructor**

CME 412 Advanced Composites (CME 409 or CME 509 or MAT 501 or consent of instructor)

**CME 432 Chemical Product Design**

**CME 486 Introduction to Petroleum Engineering**

**CME 489 Principles of Biology for Bioengineers**

**CME 490 Introduction to Bioengineering (CME 324, CME 306 co-req.)**

**CME 491 Biomedical Engineering**

CME 492 Chemical Sensors & Biosensors

CME 499 Special Problems

CME 507 Advanced Thermodynamics

**CME 509 Introduction to Polymer Science - Thermoplastics (College Chemistry; physics and differential equations)**

**CME 510 High Performance Thermoset Polymers (Background in differential equations, organic or physical chemistry, or CME 509)**

**CME 511 Principles of Corrosion (MAT 501)**

**CME 512 Advanced Composites (MAT 501, MAT 509 or perm of instructor)**

CME 515 Statistical Thermodynamics (CME 311, MTH 219)

CME 521 Advanced Transport Phenomena

CME 523 Transport Phenomena in Biological Systems (BIE 503 or BIO 505; BIO 151, BIO 152; MTH218 or permission of instructor)

CME 524 Electrochemical Power

CME 526 Polymer Engineering (CME 510 or consent of instructor)

CME 527 Methods of Polymer Analysis (CME 509, 510 or consent of instructor)

CME 528 Chemical Behavior of Materials (CHM 123 or permission of instructor)

CME 529 Computational Chemistry and Molecular Simulations

**CME 530 Biomaterials**

**CME 532 Chemical Product Design (CME 311, 324 or consent of instructor)**

CME 533 Biofuel Production Processes (EGR 202; CHM 123 or consent of instructor)

CME 541 Process Dynamics

CME 542 Chemical Engineering Kinetics (CME 306 and CME 381 or equivalent)

CME 543 Chemical Reactor Analysis and Design (CME 306 & CME 381 or equivalent)

CME 550 Agitation (CME 412 or consent of instructor)

CME 560 Biological Processes in Wastewater Engineering

CME 562 Physical and Chemical Wastewater Treatment Processes (CHM 123 and CME 411 or consent of instructor)

CME 563 Hazardous Waste Engineering (CHM 123 and CME 411 or consent of instructor)

CME 564 Solid Waste Engineering (CHM 123 and CME 411 or consent of instructor)

CME 565 Fundamentals of Combustion (CME 311, CME 306 or consent of instructor)

CME 566 Advanced Separations (CME 365 or equivalent or consent of instructor)

CME 574 Fundamentals of Air Pollution Engineering I (CME 311, CME 324 or consent of instructor)

CME 575 Fundamentals of Air Pollution Engineering II (CME 574 or consent of instructor)

CME 576 Environmental Engineering Separation Processes

CME 579 Materials for Advanced Energy Application

CME 581 Advanced Chemical Engineering Calculations I (MTH 219 or permission of instructor)

CME 582 Advanced Chemical Engineering Calculations II

CME 583 Process Modeling (CME 582 or equivalent)

CME 586 Introduction to Petroleum Engineering

CME 590 Introduction to Bioengineering

CME 591 Biomedical Engineering

CME 592 Chemical Sensors and Biosensors

CME 595 Special Problems in Chemical Engineering

### Bioengineering Electives

BIE 503 Principles of Biology for Bioengineers (BIO 151, BIO 152 or consent of instructor)

BIE 511 Biomaterials

BIE 521 Biomechanical Engineering (EGM202, EGR 201 or consent of instructor)

BIE 529 Computational Chemistry and Molecular Simulations (CHM 124 or consent of instructor)

BIE 530 Biomaterials

BIE 533 Biofuel Production Processes (EGR 202; CHM 123 or consent of instructor)

BIE 537

BIE 560 Biological Processes in Wastewater Engineering (CHM 124)

BIE 561 Biomedical Engineering I (BIO 151 and CME 324) or BIE 501 or permission of instructor

### Biology Electives

**BIO 151 Concepts of Biology I: Cell and Molecular Biology**

BIO 152 Concepts of Biology II: Evolution and Ecology (BIO 151 suggested)

BIO 312 General Genetics (BIO 152)

BIO 350 Applied Microbiology (BIO 152, CHM 314)

BIO 403 Physiology I (BIO 152, CHM 314)

BIO 404 Physiology II (BIO 403)

BIO 411 General Microbiology (BIO 152, CHM 313)

BIO 415 Neurobiology (BIO 152, CHM 124)

BIO 440 Cell Biology (BIO 152, CHM 314)

BIO 462 Molecular Biology (BIO 312, CHM 314)

### Chemistry Electives

Any course that has CHM 124 as a prerequisite.

**CHM 201 Quantitative Analysis (CHM 124, 124L; Concurrent with CHM 201L)**

**CHM 201L Quantitative Analysis Lab**

CHM 234 Energy Resources Prerequisite(s): CHM 123, CHM 124

CHM 303 Physical Chemistry (CHM 201 or equivalent; co-requisite MTH 218; Concurrent with 303L)

CHM 303L Physical Chemistry Lab

CHM 304 Physical Chemistry

CHM 304L Physical Chemistry Lab (MTH 218 co-requisite)

CHM 341 Environmental Chemistry (CHM 314 or permission of instructor)

CHM 341L Environmental Chemistry Lab (Co-requisite CHM 341)

CHM 415 Analytical Chemistry (CHM 201, 201L, 302 or 304; Concurrent with 415L)

CHM 415L Analytical Chemistry Lab (CHM 201L, CHM 302 or equivalent)

CHM 417 Inorganic Chemistry (CHM 124, 314; co-requisite CHM 302 or 304)

CHM 418L Inorganic Chemistry Laboratory (CHM 201L, 314L; co-requisite CHM 417)

**CHM 420 Biochemistry (CHM 314)**

CHM 427 Medicinal Chemistry (CHM 314 and CHM 420 or CHM 451)

CHM 451 General Biochemistry I (CHM 201, 314)

CHM 452 General Biochemistry II (CHM 451)

CHM 462L Biochemistry Laboratory (CHM 420 or 451

CME 528 Chemical Behavior of Materials

### Civil & Environmental Engineering Electives

CEE 213 Surveying

CEE 214 Highway Geometrics

CEE 215L Surveying Field Practice

CEE 311L Civil Engineering Materials Laboratory

CEE 312 Geotechnical Engineering

CEE 312L Geotechnical Engineering Laboratory

CEE 313 Hydraulics

CEE 313L Hydraulics Laboratory

CEE 316 Analysis of Structures I

CEE 333 Water Resources Engineering

CEE 403 Transportation Engineering

CEE 411 Design of Steel Structures

CEE 412 Design of Concrete Structures

CEE 421 Construction Engineering

CEE 422 Design and Construction Project Management

CEE 434 Water and Wastewater Engineering

CEE 434L Water & Wastewater Engineering Laboratory

CEE 450 Civil Engineering Design

CEE 463 Hazardous Waste Engineering

CEE 546 Finite Element Analysis

CEE 560 Industrial/Domestic Waste Treatment

CEE 562\* Physical and Chemical Wastewater Treatment Processes

CEE 563 Hazardous Waste Treatment

CEE 564\* Solid Waste Engineering

CEE 580 Hydrology and Seepage (CIE 312, 313)

CEE 582 Advanced Hydraulics (CIE 313)

### Computer Science Electives

CPS 132 Computer Programming for Engineering and Science (Co-requisite MTH 168)

**CPS 150 Algorithm & Programming I (4 credit hour)**

CPS 151 Algorithm & Programming II (4 credit hour, CPS 150)

CPS 250 Introduction to Computer Organization (CPS 151)

CPS 346 Operating Systems I (CPS 250, 350)

CPS 350 Data Structures & Algorithms (CPS 151)

**CPS 353 Numerical Methods I (MTH 169, CPS 132 or 150)**

### Electrical and Computer Engineering Electives

ECE 201 Circuit Analysis (MTH 138 or 168, Concurrent with ECE 201L)

**ECE 204 Electronic Devices (EGR 203; Co-Req ECE 204L)**

ECE 215 Introduction to Digital Systems (EGR 203; Co-Req ECE 215L)

ECE 303 Signals and Systems (ECE 204; MTH 218; Co-Req ECE 303L)

ECE 304 Electronic Systems (ECE 303; Co-req ECE 304L)

ECE 314 Fundamentals of Computer Architecture (CPS 150; ECE 215; Co-Req ECE 314L)

ECE 401 Communication Systems (ECE 304; 340; Co-req ECE 401L)

ECE 401L Communication Systems Lab (ECE 304; Co-Req ECE 401)

ECE 414 Electro-Mechanical Devices (ECE 303, ECE 332)

### Engineering Mechanics Electives

EGM 202 Dynamics (EGR 201)

**EGM 303 Strength of Materials (EGR 201)**

### Engineering Management and Systems

ENM 500 Probability and Statistics for Engineers (MTH 218)

ENM 541 Production Engineering (MSC 521 or permission of instructor)

ENM 560 Quality Assurance (ENM 500 or equivalent)

ENM 561 Design and Analysis of Experiments (ENM 500 or equivalent)

### Geology Electives

GEO 115 Physical Geology

GEO 208 Environmental Geology (GEO 109 or 115, permission of instructor)

**GEO 218 Engineering Geology**

GEO 309 Surface and Groundwater Hydrology (GEO 109 or GEO 218 or permission of instructor)

GEO 412 Introductory Geochemistry (GEO 201, or permission of instructor)

### Industrial and Systems Engineering Electives

**ISE 300 Probability and Statistics for Engineers (MTH 218)**

ISE 411 Problem Solving and Decision Making

ISE 430 Engineering Economy (MTH 218 not recommended; covered in Design I)

ISE 441 Production Engineering (CPS 132; ISE 300 or MTH 167)

ISE 455 Systems Dynamics (MTH 368 or ISE 369; CPS 132)

ISE 460 Quality Assurance (ISE 300 or MTH 367; CPS 132)

ISE 461 Design and Analysis of Experiments (CPS 132, ISE 300, MTH 367)

ISE 465 Reliability and Maintainability (MTH 367 or ISE 300; CPS 132)

### Materials Engineering

**MAT 501 Principles of Materials I (MTH 219, college chemistry and physics)**

**MAT 502 Principles of Materials II (MAT 501 or equivalent)**

MAT 504 Techniques of Material Analysis (MAT 501 or permission of instructor

MAT 506 Mechanical Behavior of Materials (EGM 303 or permission of instructor)

MAT 507 Introduction to Ceramic Materials (MAT 501)

MAT 508 Principles of Material Selection (MAT 501 or permission of instructor)

MAT 509 Introduction to Polymer Science-Thermoplastics (Organic Chemistry, College Physics, and Differential Equations)

MAT 521 Nondestructive Evaluation (Permission of Instructor)

MAT 527 Methods of Polymer Analysis (MAT 509, MAT 510)

MAT 528 Chemical Behavior of Materials (College Chemistry or permission of instructor)

MAT 529 Computational Chemistry and Molecular Simulations

MAT 535 High-Temperature Materials (MAT 501 or equivalent)

MAT 540 Composite Design (EGM 303 or EGM 330)

MAT 541 Experimental Mechanics of Composite Materials (EGM 303 or EGM 330)

**MAT 542 Advanced Composites (MAT 501, MAT 509, permission of instructor)**

MAT 543 Analytical Mechanics of Composite Materials (EGM 303 or EGM 330)

MAT 544 Mechanics of Composite Structures

MAT 570 Fracture Mechanics (MAT 506 or permission of instructor)

MAT 575 Fracture and Fatigue of Metals and Alloys I (MAT 501, MAT 506, or permission of instructor)

MAT 579 Materials for Advanced Energy Applications (consent of instructor)

MAT 580 Polymer Durability

MAT 601 Surface Chemistry of Solids (MAT 501 or permission of instructor)

MAT 603 Materials Science of Thin Films (College Physics, fundamental physical and chemical properties of materials)

MAT 604 Nanostructured Materials (College Physics fundamental physical and chemical properties of materials)

MAT 605 Introduction to Carbon Nanotechnology

### Mathematics Electives

MTH 310 Linear Algebra and Matrices (MTH 308, MTH 218 or perm of instructor)

**MTH 367 Statistical Methods I (MTH 149, or 169)**

MTH 368 Statistical Methods II (MTH 367)

MTH 403 Boundary Value Problems (MTH 219)

MTH 411 Probability and Statistics I (MTH 218, MTH 308)

MTH 412 Probability and Statistics II (MTH 411)

MTH 440 Introduction to Mathematical Modeling (MTH 219, 310 or permission of instructor)

### Mechanical Engineering Electives

Strength and Materials is a prerequisite for many of the classes

MEE 312 Engineering Materials I (PHY 208, EGM 303, MEE 301 or permission)

**MEE 313 Engineering Materials II (MEE 312 or permission of instructor)**

MEE 401 Aerodynamics (MEE 308)

MEE 413 Propulsion

MEE 417 Internal Combustion Engines (MEE 301 or permission)

MEE 420 Energy Efficient Buildings

MEE 471 Design of Thermal Systems

MEE 473 Renewable Energy Systems

MEE 478 Energy Efficient Manufacturing

MEE 530 Biomechanical Engineering

MEE 567 Solar Heating Analysis

### Physics Electives

Any course that has PHY 206 as a prerequisite.

PHY 208 General Physics III - Mechanics of Waves

# Retake Policy

Retake Policy (DOC 2016-04)

Students may retake any courses taken at the University of Dayton for up to 12 semester credit hours.

* A student can retake any course. The higher of the grades earned will be used in the calculation of the student’s cumulative GPA. The lower grade will remain on the transcript with an “E” (grade excluded) notation, and credits for the excluded course will apply against the student’s allotment of 12 course retake credits.
* When a course is taken for the third time, Dean’s approval is required. The lower of the first two grades will be excluded and the other attempted grades earned as a result of the retake will be factored into the calculation of the cumulative GPA.
* The student will only receive three credit hours toward his or her degree. The credits for the excluded course will apply against the student’s allotment of 12 course retake credits.
* When a student reaches 12 semester credit hours, all further attempted course grades will be factored into the calculation of the cumulative GPA.

Credit can be earned only once for a course unless the course is specifically identified as allowing additional credit when retaken.

If students retake a course in which the topics vary, it must be demonstrated that the retaken course contains sufficiently similar content as the original course for which the students received a different grade.

Courses taken by students prior to the initiation of this revised policy, and before completion of an undergraduate degree, may be retaken within the guidelines of this revised policy.

Students and advisors should be aware that their UD calculated GPAs are UD GPAs and Graduate, Law, Medical, Dental, or Professional, or other undergraduate programs, as part of their admissions process may calculate students’ GPAs from the recorded grades of the UD transcript separate from the UD calculation including retake courses.

No grade changes are permitted after thirty days from the date listed on the grade report.

The University reserves the right to change the grading system.

# UD Offices

School of Engineering Office of Student Success

Kettering Labs Room 501

229-2892

Engineering Computing and Information Services

Kettering Lab Room 211

229-3171

Bursar’s Office

St. Mary’s Hall Room 108

229-4111

Computer Help Desk

Anderson Hall Room 28

229-3888

Flyer Student Services

St. Mary’s Room 108

229-4141

Student Employment

Alumni House – 208 L Street

229-3249

Health Center

Gosiger Hall, Ground Floor

229-3131

Learning Teaching Center and Office of Learning Resources

Roesch Library, Ground Floor

229-4898

Dining Services

Powerhouse, Room 201

229-2441

# The Co-op Program

The co-op program integrates classroom study with employment related to the student's major. Practical work experience is gained before graduation - and in today's job market, that's a big advantage. Employers vary from small, local firms to multi-national corporations and government agencies and provide unique experiences to undergraduate students.

A student is generally eligible to begin the co-op program in their second semester of their sophomore year but no later than mid-junior year. The co-op program requires alternating semesters of full-time study and full-time work.

Co-operative education allows students to:

* Train in a chosen academic discipline.
* Define career goals and evaluate career choices.
* Earn money for educational expenses.
* Gain maturity, develop self-confidence and learn money management.
* Acquire work experience.
* Develop understanding and appreciation of problems and diversities.
* Ease the transition from graduation to full-time employment.

Applying to the Co-op Program…

Requirements:

* Full-time status as a sophomore or junior undergraduate student at UD
* Successful completion of CME 203 and CME 211
* Minimum grade point average - 2.3
* Serious intent to pursue the co-op option through preparation and interview process

Competitive interviews are offered both on campus and at employer work sites. The student makes the final decision whether or not to accept an offer for co-op employment

COP 200 Seminar is recommended for the fall semester of your sophomore year. This course covers the important steps for the co-op process.

Visit the Co-operative Education Office located in the KL - Room 266 or call 229-2335.

The engineering advisor is Nancy Chase. The web site address is

http://careers.udayton.edu/students/co-op.asp

# Internship

Internship opportunities are also available and offer an alternative route to gaining work experience. Visit the careerservices@careers.udayton.edu

# Honors Program

**Requirements**

* For students pursuing the Honors diploma (thesis option), the 15 Honors credits may include at most 6 credit hours with any specific academic prefix. For example, at most six credit hours of Honors-level coursework coded as ENG XXX may apply. The remaining 9 hours must be from other disciplines.
* For students pursuing the Honors diploma (courses-only option) or Honors with Distinction diploma, the 21 Honors credits may include at most 9 hours with any specific academic prefix. The breadth requirement does not apply to the credit hours obtained as part of thesis research

**Entering the Honors Program**

A student may enter the Honors Program in one of three ways:

1. An incoming first-year student is automatically designated an Honors student if he or she meets certain criteria: 3.7 GPA or top 10% of high school class, and a 29 ACT or 1300 SAT. Membership is voluntary and can be accepted or declined at the time of initial registration or at any time prior to the beginning of the fall semester.
2. By earning a cumulative UD GPA of 3.5 or higher by the end of the first year as a full-time student a rising sophomore will be invited to the Honors Program. See Earning Honors Credits for more information.
3. As a transfer student entering UD after one to two years at another institution with a minimum cumulative GPA of 3.5 or higher, a student may apply directly to the University Honors Program. Entrance into the Program and transferring Honors credits will be negotiated on a case-by-case basis. Special Benefits and Privileges for University Honors Students

**Maintaining Membership**

To remain in the Honors Program and be eligible for its benefits, an Honors student who entered his or her first year must:

* Maintain a minimum cumulative GPA of 3.5.
* Earn 3 Honors credits by the completion of 30 credit hours.
* Earn 6 Honors credits by the completion of 60 credit hours.
* Earn 9 Honors credits by the completion of 75 credit hours for the Honors diploma (Thesis Option)
* Earn 12 Honors credits by the completion of 90 credit hours for the Honors diploma (Courses-Only Option) the Honors with Distinction diploma.
* Exhibit responsible and respectful behavior, including academic honesty and a record free of disciplinary issues that cause concern to the University community.

For a student who entered the Program as a sophomore or second-year transfer student to remain in the Honors Program and be eligible for its benefits, he or she must:

* Earn 3 Honors credits by the completion of 60 credit hours.
* Earn 6 Honors credits by the completion of 75 credit hours.
* Earn 9 Honors credits by the completion of 90 credit hours for the Honors diploma (Thesis Option)
* Earn 12 Honors credits by the completion of 90 credit hours for the Honors diploma (Courses-Only Option) the Honors with Distinction diploma.
* Transfer student credit-hour thresholds will be negotiated on a case-by-case basis. However, once a UD GPA is established, the transfer student is expected to meet the regular requirements of the Program.
* Exhibit responsible and respectful behavior, including academic honesty and a record free of disciplinary issues that cause concern to the University community.

**Special Benefits and Resources for University Honors Students**

The Honors Program sponsors a variety of cultural activities and special events for students each year, including the Honors Students Symposium and the Honors Art Exhibition. In addition, certain privileges are awarded to members of the Honors Program to support their academic endeavors.

Benefits and Resources

* Students completing the Honors Program diploma criteria will graduate with a specially notated Honors diploma and key.
* Incoming first-year Honors students are assured academic scholarships through the University's scholarship selection process, provided appropriate application materials are submitted on time.
* Honors students may apply for fellowships to assist with international study, research or service projects through the University's Cordell W. Hull International Fellows Fund.
* Honors students may apply for fellowships to assist with Honors Thesis projects and for travel funds to present their research at scholarly or professional conferences. Outstanding thesis projects may be eligible for additional fellowships through the Patrick F. Palermo Honors Program Founders Fund.
* Honors students receive priority registration (as determined by the Registrar's Office each semester).
* Honors students receive special library benefits, including the use of an Honors Study Room and book loaning privileges:
  + UD Max Books = 200
  + UD Loan Period = 56 days, 1 renewal
  + Maximum "holds" = 100
  + Max OhioLink = 200
  + Max OhioLink Loan Period = 21 days
  + Ms. Heidi Gauder, Library faculty, offers periodic workshops to all thesis writers to support their research projects.
  + The use of Roesch Library Room 403 for group or individual study. (See circulation desk staff to check out room key.)
  + The use of Roesch Library Room 205 for group or individual study (available only after 5pm weekdays). (University ID swipe access)
  + Honors students are eligible to apply for three University Library Honors internships each year.
* The Honors Student Center (Rooms 120-122) in Alumni Hall is available for study, meetings or academic on-line conferences:
  + The space is available from 7:00 a.m. to 1:00 a.m. every day.
  + This is a quiet zone for studying.
  + The room may be reserved for Honors student meetings of up to 15 people (contact Ms. Jill Talley for reservations).
  + The room and equipment may be reserved for Honors student academic on-line conferences (contact Ms. Jill Talley for reservations).
* The Associate Director for Prestigious Fellowships and Graduate School Advising assists students considering graduate school and students applying for prestigious awards and national competitive fellowships. Click here to learn more about these opportunities.
* Honors students may participate in the annual Honors Art Competition and Exhibit.
* Honors students can enjoy the cultural arts on campus and in the Dayton area (within a 35-mile radius of campus) with help from the University Honors Program:
  + We will subsidize tickets (for you and a friend) ―half the cost of the ticket up to $10 each―for Dayton-area cultural events. Just bring us your ticket stub and the receipt in person within 30 days of the performance.
  + See the Cultural Events Calendar for details about many upcoming events.

The Career Services liaison, Assistant Director Elizabeth Seager or Lisa Witt, can be contacted for career advice at 937.229.2072.

**Earning Honors Credits**

To graduate with the Honors or Honors with Distinction diploma, a student must amass either 15 or 21 Honors credits. These Honors credits may be obtained in a variety of ways (see Diploma Options).

**All Honors courses must earn a grade of "B" or above to earn Honors credits.**

Honors courses (as ENG 200H) or Honors sections (marked “H” as PSY 353 H1)

Chaminade Scholars earn 9 Honors credit hours.

Year 1: REL 356 = 3 Honors credits

Year 2: ASI 357 = 3 Honors credits

Year 3: ASI 358 = 3 Honors credits

Graduate-level courses taken for undergraduate credit. (See Graduate Coursework information on website)

Contract Honors courses, with prior approval of the Honors Program and the Department; limited to two contract courses per student. Note that Honors courses taken as part of a study abroad are counted as contract courses and contribute to the maximum contract course credit limit. (\*\*see Honors Contract Courses below for details)

**Students may earn no more than 12 Honors credits from courses at the 100- or 200-level, combined**.

Entering Class: Beginning Your Honors Experience

At most, students need to earn three honors credits per semester (with one semester unclaimed).

All Honors students will begin their UHP experience as first-year students in one of two ways (depending on your major):

* By taking the first-year Honors Seminar (ENG 200H): This course is only offered to incoming first-year Honors in the fall semester. It provides a unique opportunity to complete your Common Academic Program English composition requirements (required of all students) in one semester instead of two, and comes with the added benefit of Honors housing. It is, in effect, an Honors ILLC.
* Completing the first year (Fall and Spring semesters) of the CORE Program (ASI 110 and ASI 120): The CORE Program offers an innovative interdisciplinary curriculum that allows students to complete their Common Academic Program English composition and other humanities commons courses (required of all students) as an integrated whole over two semesters. First-year CORE students are also housed together. The CORE Program is required of all humanities majors (English, History, Philosophy, and Religious Studies) and recommended for those majoring in Teacher Education. For more on the CORE program see www.udayton.edu/artssciences/core/.

Breadth Requirements for Honors Courses

* For students pursuing the Honors diploma (thesis option), the 15 Honors credits may include at most 6 credit hours with any specific academic prefix. For example, at most six credit hours of Honors-level coursework coded as ENG XXX may apply. The remaining 9 hours must be from other disciplines.
* For students pursuing the Honors diploma (courses-only option) or Honors with Distinction diploma, the 21 Honors credits may include at most 9 hours with any specific academic prefix. The breadth requirement does not apply to the credit hours obtained as part of thesis research.

**Additional Ways to Earn Honors Credit Hours**

Study Abroad

* Students participating in a summer or semester study abroad experience (with a minimum of 6 UD academic credit hours) earn 3 Honors credits per study abroad. A maximum of two such study abroad experiences can be used to earn a total of 6 Honors credits.
* Honors credits for Honors courses successfully completed and taken as part of a study abroad are counted separately; however, they are considered contract courses and contribute to the maximum contract course limit of two.
* ETHOS participation

Nonacademic or Experiential Learning

* Application can be submitted for Honors credits for substantial experiential activities involving scholarship, skills acquisition and/or vocational discernment in which no academic credit hours are earned (\*\*\*see Nonacademic Credit Work below for details).

National Fellowship Applications

* The successful submission of a nationally competitive fellowship or scholarship, determined complete by the Associate Director for Fellowships and Graduate Guidance, will be awarded 3 Honors credits. A student need not receive the fellowship or scholarship but must work with the Associate Director for Fellowships and Graduate Guidance to receive the Honors credits.
* Fellowships and scholarships available for Honors credit include, but are not limited to the Boren, Gates-Cambridge, Ford, Fulbright, Hertz, James Madison, Marshall, Mitchell, Rhodes, Rotary, Truman, Udall , Woodrow Wilson, and Critical Language Scholarship.

# Faculty of the Department of Chemical Engineering

**Mr. Thane Brown**, Part-Time Instructor, B.S. Oregon State University (1961), retired Director of North American Engineering for Proctor & Gamble

**Dr. Charles E. Browning**, Department Chairman, Professor, Ph.D., University of Dayton (1976). Research interests composite materials

**Dr. Amy Ciric**, Senior Lecturer, Ph.D., Princeton University (1990). Research interests lie in the areas of process Synthesis and optimization and non-ideal distillation.

**Dr. Kristen K. Comfort**, Assistant Professor, Ph.D., North Carolina State University (2008). Research Interests: Nanomaterial-Cellular interactions and effects, Enhanced in vitro models, Dynamic Flow Cellular systems

**Dr. Donald A. Comfort**, Assistant Professor, Ph.D., North Carolina State University (2006). Research interests – biocatalysts, bioremediation.

**Dr. Matthew J. Dewitt**, Adjunct Professor and UDRI Joint Appointee, Ph.D., Northwestern University (1999). Oxidative and pyrolytic reaction chemistry; quantitation and mitigation of emissions from combustion sources; hydrocarbon fuel chemistry and engineering.

**Dr. Michael J. Elsass**, Director – Chemical Engineering, Lecturer, Ph.D., The Ohio State University (2001). Research interests are in the areas of data analysis, decision support, diagnostics and modeling knowledge in chemical engineering operations

**Dr. Erin Gibbemeyer,** Adjunct Professor, Ph.D., The Ohio State University (2014). Research Interests: Sustainable Process Modeling, Design, and Optimization; Life Cycle Analysis; Student Engagement and Self-Efficacy in Engineering Education

**Dr. Donald A. Klosterman**, Associate Professor and UDRI Joint Appointee, Ph.D., The University of Dayton (1994). Research interests are composite and polymer engineering.

**Dr. Khalid Lafdi**, Professor, Ph.D., University of Pau (1989). Research interests include carbon foams, carbon nanoconstituents, composite materials, and design fabrication of thermal property devices for micro- and nanometric measurements.

**Dr. C. William Lee**, Professor; Ph.D., The Ohio State University (1982). Research has been in the area of modeling, control and automation of polymer processing.

**Dr. Chris Muratore**, Adjunct Professor, Ph.D., Colorado School of Mines (2002). Research interests in multifunctional nanocomposite materials, interfacial thermal transport phenomena and characterization of materials properties.

**Dr. Kevin Myers**, Professor, D.Sc., Washington University (1986). Research interests include mixing, chemical reaction engineering, and process modeling.

**Dr. Tony Saliba**, Professor, Ph.D., The University of Dayton (1986). Research involves the development and use of process models, expert systems and expert models for the intelligent processing of advanced composite materials

**Dr. Sarwan Sandhu**, Professor, Ph.D., The Imperial College, London (1973). Research activities involves the application of thermodynamics, kinetics and reaction engineering in addition to fluidization, electrochemistry and electrochemical engineering, batteries/fuel cells, optics, and material science engineering.

**Dr. Erick Vasquez**, Assistant Professor, Ph.D., Mississippi State University (2013), Research interest areas: Synthesis, characterization, and applications of surface-functionalized nanoparticles, polymer brushes, biomaterials interactions with nanoparticles, transport modeling

**Dr. Robert Wilkens**, Associate Dean for Research and Innovation, Ph.D., Ohio University, (1997). Research interests are in the area of multiphase flow, thermal management, and fluid mechanics.

# Forms

108



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| UNIVERSITY OF DAYTON  SCHOOL OF ENGINEERING | REQUEST TO MODIFY PROGRAM OF STUDY |



This form is used to request a modification of a School of Engineering program of study. The decision on the request will be emailed to the student. The student may view the change on the Porches website.

This section is to be completed by the student and then brought to the Department Chairperson for review and recommendation to the Dean of Engineering.

UD ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Major: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Please explain why this request is being made.

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*Student’s Signature Date*

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|  | I recommend approval of this request. |  | I do not recommend approval of this request. |

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*Chairperson’s Signature Date*

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|  | I approve this request. |  | I do not approve this request. |

Associate Dean’s Comments:

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*Associate Dean’s Signature Date*

Please forward this form to the Office of the Dean of Engineering, KL-564, Zip +0254.

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| UNIVERSITY OF DAYTON  SCHOOL OF ENGINEERING | REQUEST TO WAIVE A COURSE |



This form is used by a department chairperson to recommend that a course be waived. The decision on the request will be emailed to the student. The student may view the change on the Porches website.

UD ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Major: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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COURSE (CODE AND NUMBER) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Please explain why this recommendation is being made.

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*Signature of Chairperson Date*

***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

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|  | I approve this request. |  | I do not approve this request. |

Associate Dean’s Comments:

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

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*Associate Dean’s Signature Date*

Please forward this form to the Office of the Dean of Engineering, KL-564, Zip +0254.



**REQUEST FOR APPROVAL OF A MINOR**

**UNIVERSITY OF DAYTON**

**SCHOOL OF ENGINEERING**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student ID No. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

School of Engineering Major \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Title of Minor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| ***Course Number*** | ***Course Title*** |
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If it is necessary or desirable to change the minor program of study, a separate sheet must be submitted for approval by the Associate Dean. Courses will be verified on student’s DegreeWorks at time of graduation.

Remarks:

Approval:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Adviser Date

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chair of School of Engineering Department Offering the Minor Date

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Associate Dean Date

Rev. 8/13



**REQUEST FOR APPROVAL OF A CONCENTRATION**

**UNIVERSITY OF DAYTON**

**SCHOOL OF ENGINEERING**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student ID No. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

School of Engineering Major \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Title of Concentration \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| ***Course Number*** | ***Course Title*** |
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If it is necessary or desirable to change the concentration, a separate sheet must be submitted for

approval by the Associate Dean. Courses will be verified on student’s DegreeWorks at time of graduation.

Remarks:

Approval:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Adviser Date

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chair of School of Engineering Department Offering Date

the Concentration

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Associate Dean Date

Rev. 8/13

**PRINT LEGIBLY IN BLUE/BLACK INK \* FORM WILL BE READY TO PICK UP FROM THIS OFFICE IN 5 BUSINESS DAYS\***

***School of Engineering Dean’s Office* Traditional Course: \_\_\_\_\_**

300 College Park, Dayton, OH 45469-0254 **On-Line Course: \_\_\_\_\_**

(937) 229-2736 Fax (937) 229-2756 **On-Line/Proctored Course: \_\_\_\_\_**

**TRANSIENT STUDENT CERTIFICATION**

***for UNDERGRADUATE students***

**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name:** |  | **College/University you plan to attend:** |  |
| **Address:**  **(Home address)** |  | **City, State** |  |
| **City, ST, ZIP** |  | **TERM TO BE TAKEN (ex: Summer 2016):** |  |
| **Student ID** |  | **EMAIL ADDRESS:** |  |
| **MAJOR(s)** |  | **PHONE :** |  |

***Notes to Student:***

1. You must complete this form, discuss this course(s) with your advisor or department chair, and check your DegreeWorks requirements.
2. You are currently enrolled at the University of Dayton as an undergraduate student.
3. You must have confirmation of courses being taught at your chosen school. A listing in the University catalog does not guarantee it will be taught during the semester.
4. You must attach the course descriptions(s) of the course(s) with all forms. For on-line courses the course description; the course syllabus; documentation from the other school the tests/exams will be proctored; evidence the school is ABET accredited must be provided.
5. You are responsible to get the OFFICIAL transcript with the grade(s) posted from the above listed school mailed to the following UD address: ***University of Dayton, 300 College Park, Dayton, OH 45469-0254***upon completion of the course.
6. Transfer credit will not be granted for any course previously taken at the University of Dayton – including courses passed with final grade of “D”. Transfer credits will not replace a grade of a “D” or an “F” for a course taken at UD.
7. Transfer credit will not affect your University of Dayton cumulative grade point average.
8. **You will only receive transfer credit for courses that have a C- or better.**
9. ***By signing this form, you have read and completed all necessary steps.***

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**S*tudent Signature Advisor Signature Department Chair Signature***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COURSE(S) TO APPROVE**  (COMPLETED BY STUDENT) | | | | | **UD EQUIVALENT**  *(*COMPLETED BY STUDENT AND APPROVED BY ADVISOR OR DEPARTMENT CHAIR) | | | |
| **DEPT.** | **COURSE**  **NO.** | **COURSE TITLE** | **CR.**  **HRS.** | **DEPT.** | | **COURSE**  **NO.** | **COURSE TITLE** | **SEM**  **HRS.** |
|  |  |  |  |  | |  |  |  |
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**Please attach a copy of the course description for each course listed above.**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *Associate Dean*  *Date*

**Note to Transient Registrar:** The above-named student is in good standing at the University of Dayton, has at least a 2.00 cumulative average, and has permission to attend college or university as a transient student for term and year shown above.

**~\*~For approval, this form needs to taken to the School of Engineering Dean’s Office to be reviewed and signed by the Associate Dean– Kettering Lab 564 \*~\* (revised 5/16)**

**School of Engineering Bachelor’s Plus Master’s Program**

**Admission Requirements and Application Procedure**

1. UD undergraduate engineering students with a GPA of 3.0 or better at the time of application are eligible to apply. Students should apply during the second semester of their junior year. It is recommended that applications be submitted no later than October 1 of a student’s senior year.
2. Students who meet the preliminary admission requirements will be provisionally accepted into the program. A letter of acceptance will be sent to the student via the address listed on the application.
3. All BPM Graduate Students will be charged a discounted rate equal to ½ of the undergraduate tuition rate per hour. For nearly every student, this ensures that out-of-pocket tuition expenses are less in the 5th year than in the 4th. BPM Graduate Student status normally lasts for only the three consecutive semesters subsequent to completing the bachelor’s degree, after which normal graduate tuition will be charged. May graduates may begin BPM Graduate Student status in the subsequent fall semester.
4. The student will be permitted to enroll in graduate courses approved by both the student’s undergraduate department and the graduate chair/program director of the program to which the student is seeking a master’s degree. Undergraduates can enroll in more than six semester hours of graduate courses but, only six semester hours will be counted toward both the B.S. and M.S. degrees.
5. Once the student has successfully completed 75 percent of their undergraduate credit hours, they must apply to the graduate program of their choice through the Graduate School’s on-line application process: http://www.udayton.edu/apply/graduate.php#3.
6. Students admitted will continue to be classified as undergraduate students until all undergraduate degree requirements are completed. These students need to take 12 or more semester hours to maintain full-time status and will be charged the standard tuition and fee rates applicable to undergraduate students. Graduate courses taken for undergraduate credits will be assessed at the standard undergraduate tuition and fees. Under no circumstance will a student be charged an amount in excess of the listed undergraduate full-time tuition and fees amount (unless increased for overload hours as applicable). Upon successful completion of their undergraduate requirements, students will receive their B.S. degree.
7. When students have completed their undergraduate requirements, they will be admitted into the appropriate M.S. degree program with regular status, provided that they have maintained a cumulative GPA of 3.00 or higher in both their undergraduate and graduate course work.
8. Master’s degree students are required to maintain a minimum cumulative grade point average of “B” (3.0) in their course work. Students who fail to meet these standards are placed on academic probation or dismissed from the program.
9. The appropriate master’s degree will be conferred upon successful completion of the graduate requirements.

**School of Engineering**

**Application for Admission to Bachelor’s Plus Master’s Program**

***Current Program: (select one)******Program Applying for: (select one)***

Bach of Chemical Engr.  MS in Aerospace Engr.  MS in Engr. Mgmt.

Bach of Civil Engr.  MS in Bioengineering  MS in Engr. Mechanics

BS in Computer Engr.  MS in Chemical Engr.  MS in Mgmt. Science

Bach of Electrical Engr.  MS in Civil Engr.  MS in Materials Engr.

BS in Engr. Technology  MS in Computer Engr.  MS in Mechanical Engr.

Bach of Mech. Engr.  MS in Electrical Engr.  MS in Renew/Clean Energy

BS in Physics  MS in Electro-Optics

Student number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Last Name First Name Middle Name (Maiden Name)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Street Address City State Zip Telephone

Indicate GRE Score \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(If taken) Month Year Score

Expected date of graduation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Give the names of two faculty members who will recommend you.

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Briefly state your reasons for seeking a graduate degree. Include significant academic honors, scholarships, professional organizations and publications. (If you need additional space, please continue on a separate sheet of paper.)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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List in chronological order, beginning with most recent, all colleges attended (attach transcripts.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name of Institution | City & State | From – To  (Mo) (Yr) (Mo) (Yr) | Grade Point  Average | Degree | Major |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

List the two graduate courses (course # and name) in your proposed field to be taken during your senior year and used towards your MS degree:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Signatures:

Current Department Chair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Graduate Program Chair or Director\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Associate Dean \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Rev. 2.12.16

