



College of Engineering

Department of Biomedical Engineering

Undergraduate Handbook

Revised: March 2018



Table of Contents

Preface	1
Department of Biomedical Engineering	2
BME Undergraduate Program Philosophy	2
BME Undergraduate Program Objectives and Learning Outcomes	3
<i>Undergraduate Degree Requirements</i>	4
<i>Undergraduate Program Policies</i>	
Admission to the Undergraduate Program in BME	6
Advising	7
Placement and Qualifying Examinations	9
Honors Program	10
General Education Requirements	12
Concentration Electives	15
Directed Electives	17
<i>College of Engineering Policies</i>	
Transferring Courses towards an Engineering Degree	18
Registration for Courses	19
Withdrawal Policy	19
Course Prerequisites and Co-Requisites	20
Grade Point Average	22
Dean's List	22
Academic Probation	22
Repeating Courses	23
Exclusion from the College	24
Time Limit on Undergraduate Degrees	25
Return to the College after an Extended Absence	25
<i>Important Information</i>	
Academic Support Resources	27
Course Syllabus – A Must Read Document	27
<i>Programs and Options to Consider as You Pursue Your Degree</i>	
AGRADE Program	29
Senior Rule	30
Undergraduate Engineering Advising Contacts	31

Preface

This *Handbook* is provided for students in the undergraduate Biomedical Engineering (BSBME) Program in the College of Engineering. It includes both policies set by the College of Engineering for all students as well information specifically related to Biomedical Engineering students.

All students are responsible for knowing and following the policies outlined in this *Handbook*, the *College of Engineering Pre-Professional Handbook*, and the *Undergraduate Bulletin*. The *Undergraduate Bulletin* is published every two years. Changes to College Policy that take effect between editions will be included in revisions to the *Pre-Professional Handbook* as well as this *BME Undergraduate Handbook*. In some cases, program and policy changes will take effect for all students immediately or from a defined date. In other cases, students who entered the College prior to the enactment of a policy or program requirement will have the choice of following either the original or new policy. These grandfather provisions, if available, will be described in the various publications. Any questions about this *Handbook* or College policy can be directed to the BME Undergraduate Program Chair, the Associate Dean for Academic Affairs, and the undergraduate Academic Advisors.

Per University policy, students must graduate under degree requirements that are listed in the *Undergraduate Bulletin* currently in effect or the two previous *Bulletins*. For instance, a student who applies to graduate in 2017 must meet the program, College, and University requirements listed in the 2017-2016, 2015-2014, or 2013-2012 *Undergraduate Bulletin*. If something delays a student's progress through the undergraduate program so that she will not graduate under the Bulletin that was in effect at the time she entered Wayne State, then a conversation must be held as early as possible to identify what, if any, requirements have changed that must be accounted for.

Note: Portions of this Handbook are taken directly or indirectly from the Undergraduate Bulletin of Wayne State University and the College of Engineering Pre-Professional Handbook.

Department of Biomedical Engineering

Mission: The mission of the Department is to enhance biomedical engineering education and research at Wayne State University in order to enable our graduates to mitigate disease, trauma, and the effects of aging in society.

Department Organization: The Department spans the College of Engineering and the School of Medicine. The Department is led by a chair that reports directly to the Dean of the College of Engineering. Two Associate Chairs, one representing Engineering and the other Medicine, assist with administrative responsibilities. Academic Programs are coordinated by the Graduate Program Chair (Grad Certificate, MS, and PhD) and the Undergraduate Program Chair (BS).

Accreditation: The accrediting body for engineering programs in the US is ABET (www.abet.org). The department is ABET accredited for all graduates. We received ABET accreditation in 2016.

BME Undergraduate Program Philosophy

An individual trained in biomedical engineering is not merely an engineer who has not taken a few courses in biology; nor is he/she a physiologist with some training in physics. A biomedical engineer brings together traditional engineering principals with the life sciences in a completely integrated fashion. The result is an engineer who views the human body as a complex system, its diseases and injuries as breakdowns in that system, and medical interventions as design alternatives for the repair of the system. As the population ages and medical costs skyrocket, biomedical engineers are required both to understand the mechanistic causes of injury and disease and to design and implement interventions to prevent and mitigate the suffering of individuals and reduce the cost of medical care to society.

With this understanding, the Undergraduate Program in Biomedical Engineering is designed to completely, immediately, and continuously integrate the application of engineering with the medical domain. Starting in the first semester, students apply engineering to develop solutions to real world biomedical challenges. First and foremost, Wayne State BME students are engineers – and a strong foundation in engineering is key to the program.

The undergraduate program is also a cohort-based program. Students advance as a group, taking key courses as a block. This allows the students to develop a strong sense of camaraderie, which supports student learning. BME students participate in BME Design Labs each semester (fall and winter) of their academic program. The Design Labs are designed to meet multiple learning objectives:

- Students will apply engineering principals from their other coursework to the solution of biomedical engineering challenges.
- Students will demonstrate and refine professional skills, including those related to teamwork, communication, biomedical ethics, device regulation, and lifelong learning.
- Students will build and utilize a technical toolbox, including appropriate software tools and life science laboratory techniques.

As a result of the academic rigor of the program, students applying to the BME program are reviewed critically to determine that they have a strong probability of success in the program. The cohort size is also limited in order to insure that students have sufficient interaction with their faculty and access to the broader resources of the College and Department.

BME Program Objectives and Student Learning Outcomes

ABET requires all programs seeking accreditation to establish Program Objectives and Student Learning Outcomes. Program Objectives are defined as what graduates of the program will be able to do 3-5 years after graduation. Student Learning Outcomes describe what students will be able to do at the time of graduation.

Following discussion with the Program faculty and the Industrial Advisory Board, the following Program Objectives were established in 2011.

The Objectives of the BSBME program are to develop graduates who can:

- Work in multidisciplinary teams to translate biomedical science to application
- Utilize and advance engineering, mathematical, and biomedical tools to solve biomedical engineering problems and design biomedical engineering systems
- Continue a practice of lifelong learning in engineering and/or biomedical fields based on a strong underlying foundation in both areas of study

The program student learning outcomes guide the program development, and establish that students will be able to:

- Apply knowledge of math, science, and engineering
- Design, conduct, and analyze & interpret data from experiments
- Design a system, component, or process to meet desired needs within realistic constraints
- Function on multidisciplinary teams
- Identify, formulate, and solve engineering problems
- Understand professional and ethical responsibilities
- Communicate effectively
- Understand the impact of engineering solutions in a global, economic, environmental, and societal context
- Recognize the need for and demonstrate the ability to engage in lifelong learning
- Demonstrate a knowledge of contemporary issues
- Use techniques, skills, and modern engineering tools necessary for engineering practice
- Apply principles of engineering, biology, human physiology, chemistry, calculus-based physics, mathematics (through differential equations), and statistics
- Solve biomedical engineering problems, including those associated with the interaction between living and non-living systems
- Analyze, model, design, and realize biomedical engineering devices, systems, components, or processes
- Make measurements on and interpret data from living systems

ABET requires that these Objectives and Outcomes are reviewed and evaluated on a regular basis as part of a continuous improvement process.

BME Undergraduate Curriculum

The minimum degree requirements for the BSBME degree include 130 credit hours, at least 48 of which must be engineering credits and at least 32 of which must be math and science credits. Described are the standard curriculum recommendations. Students pursuing Honors and Pre-Med variations should confer with an academic advisor to review recommended course progression and additional requirements for those secondary curricula. Course names are available in the *Undergraduate Bulletin*.

Directed electives and concentration electives should be selected from the course list provided. These must be presented and approved on a Concentration Plan worksheet.

The basic components of the program include:

Basic Math and Science (32 cr):

- MAT 2010, 2020, 2030, and 2150
- CHM 1225, 1230, and 1240
- PHY 2175 and 2185

Life Science (9cr):

- BIO 1510 w/ Lab
- BME 2010
- BME 2070
- BME 4010

Biomedical Engineering Core (20 cr):

- Design: BME 1910, 1920, 2910, 2920, 3910, 3920, 4910, and 4920
- BME 3470
- BME 4xxx, 5xxx, or 6xxx

Biomedical Engineering Concentration (15 cr):

- BME 4X10 – Bridge Course
- 12 credits of Concentration Electives

Core Engineering (26 cr):

- BE 1300 and 2100
- BE 1500
- CHE 3200
- ECE 3300
- ME 2410 and 2420
- 4 credits of Directed Electives

General Education (28 cr):

BC, IC, OC, CT, AI, FC, HS, PL, SS

New General Education (eff. Fall 2018)

BSBME Course Progression

	Fall	Winter	Spring/Summer
Year 1	BME 1910 BE 1500 CHM 1225/1230 MAT 2010 MAT 2110* <i>14 credits</i>	BME 1920 BE 1300 BE 2100 MAT 2020 MAT 2120* PHY 2175 <i>17 credits</i>	BIO 1510 ENG 1020 <i>7 credits</i> ENG 3050 Gen Ed
Year 2	BME 2910 BME 2070 CHM 1240 MAT 2030 ME 2410 PHY 2185 <i>18 credits</i>	BME 2920 BME 2010 ECE 3300 MAT 2150 ME 2420 <i>14 credits</i>	 <i>6 credits</i>
Year 3	BME 3470 BME 3910 CHE 3200 ENG 3060 Directed Elective <i>15 credits</i>	BME 3920 BME 4010 BME 4X10 BME 4-6XXX Gen Ed <i>13 credits</i>	Gen Ed <i>3 credits</i>
Year 4	BME 4910 Conc Elective Conc Elective Gen Ed <i>14 credits</i>	BME 4920 Conc Elective Gen Ed (x 2) <i>13 credits</i>	

Admission to the Undergraduate Program in Biomedical Engineering

The BSBME program is highly selective and requires a Personal Statement in addition to the application from all students. Therefore, the first step is to apply to Wayne State. Either after receiving admission to the University, or concurrently, the BME Personal Statement must be uploaded to the Application by January 15th.

Students are encouraged to apply early to the University. Early application increases students' eligibility for scholarship programs. In addition, BME enrollment is limited to 40 students per cohort. Applications are reviewed as they are received, and outstanding students are admitted on a rolling basis. The initial deadline for full consideration of a freshman/first year application is January 15. Applications received after that date will be considered on a space-available basis. Transfer applications for admission as a 2nd year student should be submitted by March 1. Students have till May 1st to accept their decisions. Paper Application is available for transfer students.

Recommended Academic Background:

Students are encouraged to pursue more advanced coursework in mathematics (including calculus), chemistry, and biology – although this is not required. However, all BSBME students are expected to be able to begin in the following courses and must have sufficient background to place into these (or more advanced) courses:

- MAT 2010 – Calculus I
- CHM 1225 – General Chemistry
- ENG 1020 – Basic Composition
- BIO 1510 – Basic Life Mechanisms

Students who have not attained this background through high school may take foundational courses at a community college or university and then apply to the program.

Admission Requirements - Freshmen: Students applying directly from high school, including if they have earned dual enrollment or AP credit, are expected to meet the following minimum requirements:

- Overall cumulative gpa of 3.5 or higher
- Math/Science gpa of 3.5 or higher
- Minimum Math ACT score of 29

Students admitted as freshmen will be admitted to the first year of the BME program and can expect to complete the program in four years. Due to the integration of BME design throughout the four years of the curriculum, students cannot complete the program in less than four years even with significant amounts of AP and dual enrollment credit. Students who do have substantial course credit before entering Wayne State are encouraged to consider pursuing a minor or a dual major.

Admission Requirements - Transfer Students: Students who have completed one or more years of college-level coursework (university or community college) may apply as transfer students. Depending on the coursework completed, transfer students may be admitted as first year, 2nd year students. In general, transfer students must have earned a 3.5 or higher math/science gpa and a 3.3 or higher overall gpa in college-level coursework

Students accepted as transfer students into the 2nd year of the program should have completed the following coursework (or equivalent) before the end of the Spring/Summer semester in which they join the program:

- Mathematics: MAT 2010 and MAT 2020
- Chemistry: CHM 1225/1230
- Physics: PHY 2175 (with lab if pre-med)
- Biology: BIO 1510
- Engineering: BE 1300, BE 1500, and BE 2100
- English: ENG 1020

Students who are admitted to the program as a 2nd year transfer must complete BME 1925 during the Spring/Summer semester in order catch up with their cohort

Advising

Advising for undergraduate students enrolled in the Biomedical Engineering Program comes from four sources:

- Namrata Murthy, Academic Advisor: Responsible for assisting students with development of a plan of work, selection of general education and elective courses, and maintaining academic progress. Enforces College of Engineering and University academic policy. Will set approved overrides to assist with registration.
- Professional Advisors: Point person for discussions regarding professional development, specifically completing the Concentration Course Selection form. Each class and concentration has an assigned member of the department faculty to advise them in selection of courses to fulfill their concentration requirements. See table at the bottom of this page, or on the program website.
- Undergraduate Program Faculty: Great sources of information regarding professional opportunities, links to industry and research internships, and general plan of work development.

Dr. Harini Sundararaghavan, Undergraduate Program Chair: Responsible for enforcing adherence to Departmental academic policy. Requests for waivers of Departmental policy should be addressed in writing to the Undergraduate Program Chair. Dr. Harini Sundararaghavan, Associate Professor, hsundara@wayne.edu or ey5087@wayne.edu

- Dean Jeffrey Potoff, Associate Dean for Academic and Student Affairs: Responsible for oversight of all academic programs within the College and enforcement of College academic policy. Requests for waivers of College policy should be submitted in writing to the Associate Dean for Academic Affairs. This includes matters concerning the Basic Engineering courses of the core curriculum. Students must meet with their academic advisor first, and receive a referral, before seeing the Associate Dean for Academic Affairs. The Associate Dean also serves as the Judicial Officer for the College of Engineering.

Students are encouraged to meet with their Academic Advisor at least on an annual basis. Meetings every semester can provide a student with up-to-date feedback on their academic progress. This meeting should include developing a detailed plan of work for the next four semesters of a student's curriculum. This plan of work is not unchangeable, but will provide a student with a road map towards their educational goal.

PROFESSIONAL BME FACULTY ADVISORS

Classes of	Biomechanics	Biomaterials	Biomedical Instrumentation
2017, 2021	Dr. John Cavanaugh	Dr. Weiping Ren	Dr. Mohammad Mehrmohammadi
2018, 2022	Dr. Mahendra Kavdia	Dr. Uli Klueh	Dr. Juri Gelovani
2019, 2023	Dr. King Yang	Dr. Harini Sundararaghavan	Dr. Mohammad Nasiravanaki
2020, 2024	Dr. Liying Zhang	Dr. Mai Lam	Dr. Zhifeng Kou

Placement and Qualifying Examinations

Biomedical Engineering undergraduates are required to start in freshman engineering levels of coursework in Biology, Chemistry, English, and Mathematics. Admission to the BME program is contingent upon this placement, either based on ACT scores (within the past two years), transfer credit, or placement test results.

Chemistry Placement Examination: The sequence of chemistry courses for the BSBME the degree begins with CHM 1225 and CHM 1230 *There is no ACT score for Chemistry placement. Therefore, all incoming students must take the Chemistry Placement Exam for appropriate placement unless AP or transfer credit already exists on their record.*

English Placement Examination: In order to register for ENG 1020, students must meet one of the following placement requirements: 1) English ACT score of 21 or higher taken within 2 years of planned registration for the course; 2) appropriate placement on the English Placement Exam; or 3) satisfactory grade (C or higher) in ENG 1010.

Mathematics Placement Examination: The sequence of mathematics courses for the BSBME degree begins with MAT 2010. BME students must demonstrate placement into at least MAT 2010 through either a Math ACT score of 29 or higher, a score of 3 or better on the AP Calculus AB or BC examination, transfer credit of MAT 2010 or higher (with a grade of C or higher), or through the Math Placement Exam.

Biology Placement Exam – In order to register for BIO 1510, students must meet one of the following placement requirements: 1) Composite ACT score of 21 or higher taken within 2 years of planned registration for the course; 2) appropriate placement on the Biology Placement Exam; or 3) satisfactory grade (C or higher) in BIO 1050

Honors Program

Students in the College of Engineering have the option of pursuing their degree through the Honors College or with Engineering Honors. Admission to the Honors College is by invitation to incoming freshmen only. If courses are chosen carefully, students can complete both University and College Honors requirements without any additional credit hour requirements. University Honors builds on the Engineering Honors program – all credits earned as part of the Engineering Honors Program apply to the requirements for University Honors. A publication is available on the BME Website with specific suggestions for selection of Honors courses to most easily satisfy these requirements.

University Honors

Students interested in earning their degree with University Honors must first be invited to join the Honors College as an incoming freshman. In order to graduate with University Honors, students must complete 36 credits of Honors coursework, including the following:

- HON 1000 – The City (SS)
- PS 1010 (Honors Section) – American Government (AI)
- HON 3000 – Service Learning
- HON 42XX – an Honors seminar in an area of the student’s choice
- BE 5998 – Honors Thesis

In order to graduate with University Honors designated on the transcript, students must complete their overall undergraduate program with a minimum gpa of 3.3 as well as earning at least a 3.3 gpa in the honors designated courses.

Engineering Honors

Students interested in earning Honors in Engineering in conjunction with their Bachelor of Science in Engineering must complete 24 credits of honors courses, including 12 credits of honors coursework in Engineering.

To be eligible for the Engineering Honors Program, BME students must meet the following criteria::

- Enter the University with a 3.5 overall grade point average from High School
- Have earned a minimum of a 3.5 grade point average after at least 24 credits of University coursework
- Maintain a cumulative grade point average of 3.5 or higher, with at least a 3.3 in the Honors-designated courses, throughout the course of undergraduate study.

The following are the required courses for students to earn Honors in Engineering:

- HON 42XX – Honors Seminar (3 – 4 cr)
 - Students should select an Honors Seminar that satisfies a remaining General Education requirement. This will then meet the student’s general education requirement in this area.
- BE 5998 – Engineering Honors Thesis (4 cr)
 - Engineering students must conduct their thesis with a full-time faculty member in Engineering. This course may be substituted for a four-credit concentration elective. This course counts towards the 12 required honors credits in Engineering.
 - Honors section of any Engineering class taken during the BSBME degree program (3 or more credits)

- Departmental Honors Course(s)
 - Students must complete at least one honors course within their departmental major requirements. For BME, this is designated as the Honors sections of BME 4910 and BME 4920 (6 credits). These courses will count towards the 12 required honors credits in Engineering.

The remainder of the required 12 credits of Engineering Honors credits can be satisfied through selection of an Honors Option in any Engineering course or by the courses listed on a student's AGRADE Plan of Work (see below)

The required courses listed above, which satisfy Engineering and University Honors requirements, cover 15 to 16 credits of the overall requirement of 24. The remaining 8 to 9 credits can be taken in any Honors-designated or Honors-option courses offered by the University. In order to apply the classes to both the Honors requirements and the Engineering program requirements, the following courses are recommended:

- BIO 1510
- CHM 1225
- MAT 2010
- MAT 2020
- Designated honors sections of Engineering courses, including courses on an AGRADE plan of work
- Honors option courses in Engineering (see below)
- Honors versions of General Education requirements

Honors-Option Coursework

The Honors Option allows a student in any course at the 2000-level or above, and taught by a regular faculty member, to elect honors type work. This requires that the instructor agree to furnish extra instructional material commensurate with expectations for an Honors course. If a grade of 'B' or above is earned in the course and in the additional work, the student will receive honors credit for the course on the transcript. Application forms for the Honors Option are available in the Honors Program Office. The application form must be signed by the instructor and departmental honors adviser, after which it should be returned to the Honors Program Office by the end of the third week of classes. After the Honors Option request is approved by the Honors Program, the form will be returned to the student until a grade is assigned by the instructor. The completed form, including the final grade, must then be returned to the Honors Program Office at the end of the semester.

Honors and AGRADE for BME Students

Honors students retain the option of entering the AGRADE program during their junior year. Students must meet with their advisor to establish an AGRADE Plan of Work, to include up to 16 credits from their BS program and the additional 18+ credits towards their MS. The Concentration electives and required courses that can be applied to the MS through the AGRADE program include:

- BE 5998 – Engineering Honors Thesis (4 cr)
- BME 5010 – Quantitative Physiology (4 cr)
- Up to 8 credits of 5000-level or higher courses on an approved Concentration Plan

The Honors College accepts courses on an AGRADE plan of work as being completed with the Honors Option. Once the AGRADE Plan of Work is approved, a copy should be emailed to honors@wayne.edu.

General Education Requirements

The University has established General Education Requirements that must be met by all students who are working towards their first undergraduate degree at Wayne State. (Students who have been awarded a previous bachelor's degree from an accredited institution are exempt from the University General Education requirements, but must satisfy all other Department and College requirements.)

Wayne State University has instituted new General Education guidelines starting Fall 2018. Please visit these website for details on the outcomes and new course options:

<http://bulletins.wayne.edu/undergraduate/general-information/general-education/>

https://provost.wayne.edu/pdf/general_education_program_-_focus_area_learning_outcomes.pdf

https://provost.wayne.edu/pdf/copy_of_new_gen_ed_courses_updated_1_30_18_mf.pdf

Other programs within the College of Engineering have stricter requirements for some of the General Education requirements than the BME Program. Therefore, students who opt to transfer out of BME into another Engineering program will need to review their academic record with their new advisor to determine whether all completed Gen Ed courses will still apply to their degree.

Till Fall 2018, the following General Education requirements are effective. Two classifications of general education requirements have been established: competency requirements and group requirements.

Competency Requirements

Students must satisfy 8 competency requirements before graduating. These can be satisfied either through satisfactory completion of a designated course (including through transfer credit) or examination. In some cases, the course used to satisfy a competency requirement is dictated by the required curriculum of the Biomedical Engineering Program.

Written Communication: The Written Communication Competency is satisfied in three stages, each of which must be completed for graduation.

Basic Composition (BC): Can be satisfied through one of the following means:

- Earning credit for basic composition through Advanced Placement or CLEP tests
- Completing (with a C or better) ENG 1020
- Transferring credit received for successful completion of a composition course taken at another college or university (with a grade of C or better)

Intermediate Composition (IC): Can be satisfied through the successful completion (C or better) of ENG 3050 or through transfer of an equivalent course in technical writing (with a grade of C or better). Students who transfer in a course in intermediate composition that is deemed to meet the IC requirement, but does not cover the topics of technical writing included in ENG 3050, are still required to successfully complete ENG 3050. Second degree students who do not have previous course-work in technical writing must also successfully complete ENG 3050. Students who wish to have coursework evaluated for equivalency to ENG 3050 must contact the Department of English.

Writing Intensive Course in Major (WI): All students must satisfactorily complete the course designated by their major department to satisfy the WI requirement. For BME, this is BME 4910.

Oral Communication (OC): For all Engineering students, the OC requirement must be met by successfully completing (with a grade of C- or better) ENG 3060. Second degree students must demonstrate completion of equivalent learning objectives or complete ENG 3060.

Mathematics (MC): The MC requirement is met at Wayne State by satisfactory completion of MAT 1050, placement into MAT 1800 or higher through the Math Placement Examination (see above), or transfer in of the equivalent of MAT 1800 or MAT 2010. All Engineering students satisfy this requirement through their required mathematics courses.

Computer Literacy (CL): Before completing 60 credits of coursework, all students must demonstrate basic computer literacy. Engineering students satisfy this requirement through BE 1200 (Class of 2014 and 2015) or BE 1500 (*Still to Be Approved* – Class of 2016 and beyond).

Computer Proficiency (CP): All Engineering graduates satisfy the CP requirement through completion of their advanced coursework (professional level courses).

Critical Thinking (CT): Engineering students are encouraged to satisfy the CT requirement through the Critical Thinking Competency Examination. This exam is designed to be taken by students before they earn 60 credits of course work. BME students are encouraged to take the exam before completing the program requirements listed in the fall semester, sophomore year of their curriculum. The Critical Thinking examination may be attempted once per semester. Students who transfer into the University may apply a transferred course to the CT requirement if it is approved as such by the Transfer Credit Evaluation Office. Students who fail the Critical Thinking Competency Examination should register for one of the courses identified by the University as satisfying the CT requirement (BA 1010, COM 2110, ISP 3260, or PHI 1050).

Group Requirements

All students must take a single course (minimum of 3 credits) in each of eight group areas. The selection of those courses is governed by the following principles:

1. Courses that satisfy the Group Requirements must be selected from lists of approved courses.
2. Students who place out of a course or courses that satisfy one or more of the Group Requirements will be considered to have fulfilled those portions of the group requirements represented by such courses.
3. For the purpose of satisfying these Group Requirements, students may elect no more than two courses from a single subject area as defined by the University system of subject area codes (the letter designations which precede course numbers).
4. Where designated, a Group Requirement may be satisfied by approved course sequences.

The College of Engineering specifies in some cases a reduced list of courses from which Group Requirement classes may be selected. Students in either the University or Engineering Honors program must include an Honors Seminar in their curriculum, which can be selected to satisfy one of these Group Requirements.

Natural Sciences (PS and LS): Students must elect one course each from the PS and LS course lists. A laboratory must be associated with at least one of these courses. For Engineering students, the following courses satisfy this requirement:

- **Physical Sciences (PS):** CHM 1225/1230
- **Life Sciences (LS):** BIO 1510

American Society and Institutions (AI): BME students may elect any course from the AI list. Students in the University Honors Program must take PS 1010 (American Government).

Foreign Culture (FC): BME students may elect any course from the FC list.

Historical Studies (HS): BME students may elect any course from the HS list.

Philosophy and Letters (PL): BME students may elect any course from the PL list.

Social Science (SS): BME students may elect any course from the SS list. Students in the University Honors Program must take HON 1000 (The City).

Visual and Performing Arts (VP): BME students may elect any course from the VP list.

Concentration Electives

All BME students must complete 12 credits of Concentration Electives in order to satisfy the requirements for the BSBME degree. Specific sets of Concentration Electives have been approved for each of the undergraduate concentrations.

In order to guarantee that ABET requirements regarding minimum numbers of Engineering credits are met, at least 6 of 16 credits of Concentration Electives + Directed Electives must be in an engineering course. Note that not all 5995 courses may count for Engineering Credit. Please discuss with the Undergraduate Chair if you are electing one of these courses.

Notable exceptions are these current and former BME courses that count as life science credits and not engineering credits:

BME 2010 – Introduction to Physiology for Engineers

BME 2070 – Introduction to Anatomy for Engineers

BME 4010 – Engineering Physiology Laboratory

BME 5070 – Engineering Anatomy

BME 5360 – Histology and Embryology

Prior to registration for senior year courses, each student should file a Concentration Plan (available on the BME website) with the Undergraduate Program Chair. NOTE: Students should pay attention to listed course prerequisites in developing their Concentration Plans.

All Concentrations

BE 5998 – Honors Thesis (3-4 cr)

BME 5020 – Computer and Mathematical Applications in Biomedical Engineering (4 cr)

BME 5010 – Quantitative Physiology (4 cr.)

BME 5070 – Engineering Anatomy (4 cr)

BME 5990 – Directed Study (1 cr.)

BME 5995 – Molecular Imaging & Bio (4 cr)

IE 4260 – Principles of Quality Control (3 cr)

IE 4450 – Concurrent Engineering Design (4 cr)

IE 6240 – Quality Management Systems (4 cr)

IE 6260 – Quality Assurance and Control (2 cr)

IE 6405 – Integrated Product Develop (4 cr)

IE 6410 – Introduction to Six Sigma (4 cr)

IE 6840 – Project Management (4 cr)

Biomaterials

BME 5380 – Biocompatibility (4 cr)

BME 5390 – Exp Methods in Biomaterials (2 cr)

BME 5XXX – Cell & Tissue Biomechanics (3 cr)

BME 5995(3 cr) Fundamentals in Implant Tech

CHE 5995 – Introduction to Nano Medicine & Nano Technology (3 cr)

CHM 5600 – Biochemistry (4 cr)

MSE 5350 – Polymer Science (4 cr)

MSE 5360 – Polymer Processing (4 cr)

MSE 5600 – Composite Materials (3 cr)

Biomechanics

BME 5130 – Vehicle Safety Engineering (3 cr)
BME 5210 – Musculoskeletal Biomech (4 cr)
BME 5995 – Cell & Tissue Biomechanics (4 cr)
BME 6130 – Accident Reconstruction (3 cr)
KIN 3570 – Physiology of Exercise (3 cr)
KIN 3580 – Biomechanics (3 cr)
KIN 6310 – Physiology of Exercise II (3 cr)
IE 4120 – Intro to Human Factors Engg (4 cr)
ME 3400 – Dynamics (3 cr)
ME 5040 – Finite Element Analysis I (4 cr)
ME 5360 – Intro to Computational Biofluidics and Heat Transfer (4 cr)
ME 5400 – Dynamics II (4 cr)
ME 5580 – Computer-Aided Mech Design (4 cr)
ME 5600 – Adv Mechanics of Materials (4 cr)
ME 5610 – Exp Mech of Materials (4 cr)
ME 5720 – Mech of Composite Materials (4 cr)

Biomedical Instrumentation

BME 5510 – Intro to Clinical Engineering & Technology (2 cr)
BME 5730 – Application of Techniques in Biomed Image Processing (3 cr)
BME 6470 – Smart Sensor Tech I: Design (4 cr)
BME 6480 – Biomedical Instrumentation (4 cr)
CSC 5860 – Intro to Digital Image Proc (3 cr)
CSC 6860 – Digital Image Processing & Analysis (3 cr)
ECE 3330 – Circuits II (4 cr)
ECE 3570 – Electronics I (4 cr)
ECE 4050 – Algorithms & Data Structures (4 cr)
ECE 4330 – Linear Network & System Analysis (4 cr)
ECE 4340 – Microcomputer-Based Instrumentation Lab (2 cr)
ECE 4570 – Electronics II (4 cr)
ECE 5575 – Introduction to Micro and Nano Electro Mechanical Systems (4 cr)
ECE 5690 – Introduction to Digital Image Processing (4 cr)
ECE 5770 – Digital Signal Processing (4 cr)
PHY 5340/5341 – Optics Lecture + Lab (5 cr)
RAD 5010 – Intro to Radiological Physics (4 cr)

DIRECTED ELECTIVES

BME students must complete 4 credits of Directed Electives as part of their undergraduate program. These courses are generally lower-division (1000- to 2000-level) courses that support a student's academic goals. The Undergraduate Program Committee periodically reviews this list to identify appropriate courses. If students believe that a course not on the list would meet this objective, they may propose this to the Undergraduate Program Committee for review at least two months before the start of the semester in which the student wishes to take the course.

In order to satisfy ABET requirements for the engineering portion of the curriculum, the combination of 16 credits of Directed Electives and Concentration Electives must include at least 6 credits of engineering courses. In general, courses offered by the College of Engineering can be considered to satisfy this requirement.

Approved Directed Electives

CHM 2220/2230 (5 cr) – Organic Chemistry II + Lab
CHE 2800 (4 cr) – Material and Energy Balances
CSC 1050* (2 cr) – Intro to Unix and C++
CSC 1100/1101 (4 cr) – Problem Solving
CSC 2000* (3 cr) – Intro to C++
ECE 2610 (4 cr) – Digital Logic I
EET 2720 (3 cr) – Microprocessor Fundamentals
ME 2050 (2 cr) – Introduction to Computer Aided Mechanical Drafting
MIT 3350 (3 cr) – Applied Human Factors
MIT 3500 (1 cr) – Machine Tool Laboratory

NOTE 1: Any course on the Concentration Elective list can also be selected as a Directed Elective (but not vice versa).

NOTE 2: *Basic programming language courses (e.g. CSC 1050 and CSC 2000) do not count as engineering credits. Computer science applied to problem solving (e.g. CSC 1100/1101) can be counted as engineering credits.

Transferring Courses towards an Engineering Degree

Students who have been accepted to the College of Engineering after completing college-level coursework at another institution may apply for the courses to be transferred into the University and applied to the degree program. Requests for an evaluation of transfer credit must be made through the Transfer Credit Evaluation Office. Courses with known equivalencies (which are noted in the Transfer Equivalency Tables at www.transfercredit.wayne.edu) will be assessed by the central University office

NOTE: In order for transfer credit of any course to be applied towards an engineering degree at Wayne State, a grade of C or higher must have been earned. A grade of C- will not be accepted for transfer of these courses.

Any request for reconsideration of the evaluation of transfer credits accepted by the College of Engineering should be made in writing within *one year of the date of the student's first enrollment in the College of Engineering*. A College of Engineering Academic Petition should be provided first to the Director of Undergraduate Studies in a student's major department. Additional appeals may be made to the Associate Dean for Academic Affairs.

Once a student has matriculated at Wayne State, he or she must receive prior approval for all courses to be transferred in and applied towards a Wayne State degree. Approval must be granted in writing by the UPC Chair for Core classes and the Academic Advisor for General Education classes.

General guidelines for approval of such requests are:

- Students must be in good academic standing and have no more than three substandard grades on their WSU academic record
- **Students must not have made an attempt at the course at Wayne State. An attempt will include any transcript mark, including withdrawals, for a course.**

Students who receive permission to take a course at another institution must submit their transcript to the University. If a substandard grade is earned at the other institution, that will count towards the student's allowance of substandard grades.

Registration for Courses

Refer to the following website for instructions on Registration of Courses:

<https://wayne.edu/students/how-to-register>

Withdrawal Policy

For current information on Withdrawing from a course please visit the following websites:

<https://reg.wayne.edu/withdrawing-from-a-course>

<https://wayne.edu/students/register/dropping/>

Course Prerequisites and Co-Requisites

The College of Engineering and its departments have spent considerable time determining the appropriate course prerequisites and co-requisites. These are designed to provide students with the academic background necessary to succeed in their engineering studies. For undergraduate engineering courses, prerequisites are checked at the time of registration. The following are the policies and procedures relating to the College prerequisite policy.

- a. If a student attempts to register for an Engineering course numbered between 1000 and 4999, an automatic check of the student's record for satisfaction of the prerequisites will be made. Students must have completed a prerequisite course with a grade of C- or higher in order for the system to note the course as satisfactorily completed. The prerequisites to each course are those that are listed in the schedule of classes at www.classschedule.wayne.edu and those implied by the chain of prerequisites (see #7, below).
- b. The registration system is generally only able to review the portion of a student's record completed at Wayne State. Students who have completed one or more of the listed prerequisites at another institution MUST meet with an academic advisor to have their record reviewed. Students should bring a copy of the Transfer Credit Evaluation or, if that has not yet been completed, a copy of their transcripts from previous institutions. A manual override will be performed for their registration (see procedure outlined above). NOTE: Transferred courses must have been completed with a grade of C or higher (not C-) to be considered as satisfactorily completed.
- c. The registration system is generally only able to review courses completed during or after the Fall 1998 semester. Students who have completed one or more of the listed prerequisites prior to Fall 1998 MUST meet with an academic advisor to have their record reviewed. A manual override performed will be for their registration (see procedure outlined above).
- d. This checking system HAS NOT been implemented for courses offered by the Division of Engineering Technology or courses at the 5000-level or above. *However, all students are still required to meet the stated prerequisites for these courses.* Students who do not meet the listed prerequisites will be withdrawn from these courses unless an Academic Petition for an exception has been approved.
- e. This checking system HAS NOT been implemented for many courses outside of the College of Engineering. *However, you must comply with the listed prerequisites in your courses offered by other schools* in order to provide yourself with the best opportunity for academic success.
- f. In some cases, implied prerequisites (courses that are prereqs or co-reqs of a listed prerequisite course) have been included in the list that will be verified by the computer at registration. This is generally when the implied course was listed as a potential corequisite to the listed prereq. This is done to ensure that you obtained a satisfactory grade in this implied prerequisite course before you move on to more advanced courses.

Example: MAT 1800 (or a higher math class) is a co-requisite to BE1200. BE 1200 is a prerequisite of ME 2050. In order to assure that students who took MAT 1800 as a co-req to BE 1200 passed both courses, an implied prerequisite of ME 2050 is MAT 1800 (or a higher math class). In this case, the system will check for satisfactory completion of MAT 1800 OR MAT 2010.

- g. A course is an implied prerequisite to a course if it meets one of the following conditions:
- The course can be traced back through the prerequisite list of courses as a prerequisite to a previous prerequisite or co-requisite.
Example: MAT 2030 is a listed prerequisite of ME 3400. As MAT 2020 is a prereq to MAT 2030, and MAT 2010 is a prereq to MAT 2020, this indicates that MAT 2010 is an implied prerequisite of ME 3400 and must have been completed with a grade of C- or higher before registering for ME 3400.
 - The course is a co-requisite to a listed or implied prerequisite.
Example: ME 4150 is a prereq to ME 4500. ME 3450 and ME 4410 are co-requisites to ME 4210. Students must satisfactorily complete ME 3450, ME 4210, AND ME 4410 before moving on to ME 4500.
- h. **It is the responsibility of students** to make certain that they satisfy all listed and implied prerequisites for courses. If you are allowed to register for a course (by the computer or an advisor) and it is later discovered that you are missing a prerequisite and that you do not have an approved waiver, you will be administratively withdrawn from the course. If you have any concerns about prerequisites, please meet with your advisor.
- i. If an override has been given or the computer system has allowed registration based on a student's current registration for a course, **it is the student's responsibility** to make certain that they complete the prerequisite courses (stated or implied) with a satisfactory grade or that they drop the course for which the override was provided. If they have been found at any point to not be appropriately registered for a course, they will be administratively withdrawn from the affected course.

Grade Point Average

The grade point average is calculated both on a semester basis and as a cumulative average. In order to calculate the grade point average, use the following formula:

The grade earned is converted to a numerical value using the following equivalencies:

A	4.0	C+	2.33
A-	3.67	C	2.0
B+	3.33	C-	1.67
B	3.0	D+	1.33
B-	2.67	D	1.0
		E/F	0.0

For BME students, the “Major gpa” includes all required math, science, core engineering, and BME courses along with directed elective and concentration elective courses taken. Additional elective courses and liberal arts general education courses are not included in this calculation.

Dean’s List

Students who have registered for at least 12 credits of courses during a semester and have earned a semester grade point average of at least 3.5 will be named to the Engineering Dean’s List for that that semester. This is a tremendous accomplishment. Dean’s List status will be noted on the official University transcript, and students will receive a recognition letter. In addition, all Dean’s List students will be recognized in the program for the Honors Convocation, which is held at the end of each Winter semester.

Academic Probation

Students whose University or College cumulative grade point average falls below 2.0 will be placed on academic probation. Registration holds for University academic probation are placed automatically by the student records system. Registration holds for College academic probation (when the College gpa falls below 2.0, while the University gpa remains above 2.0) are placed by the College academic advisors.

When a student is placed on academic probation, they must meet with their academic advisor in order to determine what requirements they must meet to raise their gpa and come off of probation. This meeting is encouraged as early as possible once a student is notified that they are on academic probation. The registration hold will not be released (to allow a student to register for their next semester’s courses) until this meeting takes place.

If students are not able to raise their grade point average above 2.0 after one semester on academic probation, they are eligible for exclusion from the College of Engineering. For part-time students, the one semester deadline will be identified as 12 consecutive credit hours.

NOTE: A student will be classified as being on academic probation if their grade meets the probationary minimum, even if a registration hold is not placed on their record.

Repeating Courses

Students must earn a grade of C- or higher in all courses to be applied towards their degree. If a substandard grade is earned in a required course, the student **MUST** repeat the course in the next regular semester that it is offered. If the substandard grade is one of selected from a list of suitable courses (e.g. General Education, technical elective), the student is not required to repeat the course and may pick another accepted course to satisfy this requirement. However, only by repeating the course will the grade be replaced in the gpa calculation.

The grade earned in a repeated course will replace the original grade in the calculation of the grade point average, but the original grade will remain on the transcript. If this replacement does not happen within a few weeks after the grade has posted, students should contact their advisor for assistance. This contact is required if there is any change in course number (e.g. ME 2410 has replaced ME 2400 in the ME curriculum).

Students who have studied only at Wayne State will be ***allowed only five repeats*** in their pre-professional and professional programs. If a sixth repeat is required to complete the required curriculum, exclusion proceedings will be initiated (see Exclusion from the College). Transfer students will earn one allowed repeat for every 24 credits earned at Wayne State.

This policy on repeats will apply to courses in which grades of D+, D, D-, F (or E), WP, WF, or WN is awarded (see College Withdrawal Policy). Students who elect to repeat a course in which they received a satisfactory grade (C- or above) in order to improve their gpa and/or improve their background in a subject will not have this counted as one of their allowed repeats.

Courses that might be repeated as part of the Engineering Bridge program will not be counted towards the allowed repeats. However, only two substandard grades are allowed within the Engineering Bridge Program curriculum.

Exclusion from the College

Conditions for exclusion from the College of Engineering include the following:

- Students who are on academic probation for *more than a single consecutive* semester and who have not met the conditions set by the Associate Dean for Academic Affairs for improvement of their academic record, if any.
- Students who must repeat a sixth course in order to complete their academic program. (Please refer to policies regarding repeating courses.) For transfer students, the allowed number of repeats is earned at one per 24 credits taken at Wayne State.
- Students who receive three substandard grades (D+, D, D-, F, WP, WF, WN) in a single class.

Proceedings for Exclusion from the College may be initiated either by the student's home department or the Office of Academic Affairs. The student will be notified of the Exclusion and its effective date in writing. Students may appeal the initial Exclusion to the Academic Standards Committee by submitting a written petition through the Office of Academic Affairs. This appeal must detail why, in the student's mind, the exclusion is not warranted and must be submitted within 10 days of receipt of the exclusion notice.

An Exclusion Hold will be placed on a student's record to prohibit them registering for courses in the University. If a student elects to transfer to a program outside of Engineering, and is eligible for such a transfer, then the Exclusion Hold can be released by the University Advising Center. Students who have been excluded are encouraged to meet with an advisor at the University Advising Center to discuss options for future study.

An Exclusion from the College of Engineering is for a minimum of one year. However, readmission to the College after the one-year period is not guaranteed. In order to be considered for readmission, students must submit a written request to the Academic Standards Committee. This request must detail what has changed in the student's academic record or life circumstances that allow him/her to perform at a higher academic level than before. Substantial evidence of expected performance improvements must be presented in order for a student to be readmitted to the College.

During the period of Exclusion from the College, courses taken at Wayne or at other institutions may not counted towards an engineering degree in the event that readmission is granted.

Time Limit on Undergraduate Degrees

There is no absolute time limit on credits earned and applied to an undergraduate degree at Wayne State. However, as of 2009, University policy requires that students graduate under the academic program in a *Bulletin* that is in effect at the time of graduation – and this is defined as the current *Undergraduate Bulletin* as well as the two immediately preceding *Bulletins*. *Bulletins* are each published to span two academic years. Students who will be graduating under a *Bulletin* that is different from the one that entered under should meet with their academic advisor to determine: 1) what *Bulletin* will describe their academic requirements at graduation; and 2) how that affects the course or academic requirements for graduation.

NOTE: Students who are continuously enrolled in the College (e.g. no more than 2 consecutive semesters of non-enrollment) will in general be allowed to complete their degree program under the academic policies in place at the time of their initial enrollment. However, such students must anticipate that degree requirements do change over time. Per University policy, the degree requirements at the time of graduation must be described in one of the *Bulletins* in effect at that time (current plus two previous). As a result, if degree requirements have changed or if a student is not able to complete the program under which they entered (due to either a course or courses no longer being offered or a change in the course's credit hours), such a student must meet with their advisor and undergraduate program director in order to develop an individual plan of work that satisfies current requirements for the degree.

Return to the College of Engineering after an Extended Absence

Wayne State University has a very generous returning enrollment policy for students who were in good academic standing when last registered for courses. Students are not required to reapply to the University, though they may need to contact the University Records Office to have their academic record reactivated.

As the field of engineering is ever changing, it is important that students who graduate with an undergraduate degree do so with the skills and knowledge base essential to practicing engineering in the current professional environment. Therefore, the College of Engineering has developed policies to insure that returning students meet the objectives of the program at the time that they graduate, which may be different than the objectives in place when they initially began their engineering study. These policies are listed below.

“Stop-out” Students

For many different and valid reasons, students may defer continued enrollment at Wayne State and in the College of Engineering for one or more years. Students who elect to return to the College to continue their undergraduate study are governed by the following policies:

- a. Students who were in good academic standing (College gpa > 2.0, not eligible for exclusion) at the time of their last enrollment will be allowed to return to the College without reapplying. A student who has been away from the University for an extended period may need to contact the Registrar's Office to reactivate their student status.
- b. If a student has been away from the University for more than 3 years (9 academic semesters) since their last enrollment, that student's past academic record will be evaluated as a new transfer student. As a result:
 - c. Students will be required to comply with academic policy and program requirements in place at the time they re-enter the College.
 - d. Equivalency of credits, earned either at Wayne State or at other institutions, to current requirements will be evaluated based on course objectives and content. Significant changes in course objectives,

- even without a change in course number, may result in a student being required to retake a course.
- e. Engineering courses taken more than 6 years prior to semester in which a student is returning will require recertification by the teaching department. This requirement is designed to insure the continued relevancy of the coursework and that students maintain the foundational and advanced knowledge required to perform as engineers.
 - f. Grades of C- in courses taken at Wayne State will be allowed to count towards the degree. However, courses taken at other institutions must comply with standard transfer requirements (grade of C or higher).
 - g. If a student was in good standing at the time of their last enrollment, counting of substandard grades will commence with their new enrollment. However, the number of allowed substandard grades will be calculated based on 1 for every 24 credits to be completed at Wayne State after re-enrollment. (NOTE: This applies to students originally admitted to the College of Engineering prior to Winter 2004.)
 - h. If a student has been away from the University for between 1 and 3 years, the student will be allowed to return to the College without any required recertification of coursework. However, they must meet University requirements regarding *Bulletins* in effect at the time of graduation. In addition:
 - i. Any University or College policy that is enacted to apply to all students, irrespective of admission date, will apply to returning students.
 - j. If a previously required course is no longer offered, the student must work with their advisor and undergraduate program director to determine an alternative plan of work.
 - k. Credits taken at another institution during the period of absence from the College will be evaluated for transfer equivalency based on transfer policies in place at the time of the student's return to the College.

Internal Transfer Students

Some students who begin a program in Engineering may transfer out to another School or College within the University voluntarily. This may be due to a change in educational objectives (e.g. student wishes to pursue a degree in Business) or because they feel that they are running the risk of future exclusion from the College. These students may opt to return to Engineering to complete their first degree or to pursue a second degree. In order to ensure that students do not take advantage of internal transfer to avoid College policy ramifications, the following policy will be in effect:

- a. Students who were in good academic standing (College gpa > 2.0, not eligible for exclusion) in a pre-professional or professional Engineering program at the time of their last enrollment and who remain in good academic standing at the University will be allowed to return to the College without reapplying. If the student is hoping to join a different degree program within the College, the new program will evaluate them for admission based on current College practice on students changing programs.
- b. Students who were in good academic standing within the Engineering Bridge Program must meet with the Associate Dean for Academic Affairs to request readmission. The student must meet internal transfer admission requirements (total gpa \geq 2.5, math/science gpa \geq 3.0, placement into MAT 1800 and CHM 1225, completion of appropriate math, chemistry, and physics courses) for the pre-professional program or agree to complete Engineering Bridge requirements.
- c. Students will be subject to the academic policies and program requirements in place at the time that they re-enter a College of Engineering program. Any courses taken previously will be evaluated based on equivalency to current requirements.

**ACADEMIC SUPPORT RESOURCES:
ACADEMIC SUCCESS CENTER
And
TUTORING SERVICES IN THE COLLEGE OF ENGINEERING**

The courses in the Engineering curriculum are challenging, and it is important not to fall behind. The worst thing a student can do is to say “I’ll catch up before the exam!” Topics covered in science, math, and engineering courses build on the material that has been covered before – both in the current class and in classes you have taken previously. If at any time you find yourself struggling with concepts or falling behind, it is important that you take advantage of the support services available on campus.

Academic Success Center

Located on the first floor of the Undergraduate Library, the Academic Success Center provides a wide variety of services to assist all students with meeting their academic potential. Visit www.success.wayne.edu for additional information.

Tutoring – Free tutorial services are available on a walk-in basis for a wide variety of courses. These include courses in the required math, physics, and chemistry courses of the engineering curriculum as well as a number of Basic Engineering and departmental courses. The list of walk-in hours can be found on the Academic Success Center web site. Individual tutoring sessions can also be arranged.

Supplemental Instruction – SI is a peer-led, group study opportunity. The student leader has already taken the course, and is being paid to attend the course and meet with interested students to review the course materials and work on problem solving strategies. SI sections are free of charge and are typically arranged for 1000- and 2000-level courses that have proven to be challenging to students in the past. The list of SI sections, with times, for each semester is available on the Academic Success Center web site.

Workshops and Courses – The Academic Success Center offers free workshops to students, featuring topics such as time management, test taking strategies, and preparation for the required Critical Thinking Examination. In addition, free classes that focus on improved reading skills – including speed reading and reading of analytical textbooks – are available for Wayne State students.

Tutoring in the College of Engineering

As part of its mission of service, Tau Beta Pi – the engineering honors society – offers tutoring in engineering classes. Sessions are organized based on student requests. For more information, and to arrange to meet with a tutor, email Tau Beta Pi at tbp@eng.wayne.edu.

STEM Commons, Math, Chemistry, and Biology advising websites

<http://www.clas.wayne.edu/stemcommons/>

<http://www.clas.wayne.edu/Math/advising>

<https://success.wayne.edu/math-success/home1>

<https://success.wayne.edu/academic-success-center-tutoring-program---welcome->

<https://success.wayne.edu/studyskills>

<https://success.wayne.edu/workshop-list>

http://chem.wayne.edu/students/undergrad_advising.html

http://chem.wayne.edu/students/undergrad_clc.html

<http://www.clas.wayne.edu/Biology/Advising>

Programs and Options to Consider As You Pursue Your Degree

AGRADE Program

The Accelerated Graduate Enrollment Program (AGRADE) allows top Wayne State students to complete a Master's degree in their chosen field of engineering with only 16-20 credits in addition to the undergraduate degree (depending on undergraduate and master's fields). This is accomplished by counting 12-16 credits from the BS program towards the MS degree. In addition to the time savings, students pay undergraduate tuition for the first 12 - 16 credits of their Master's degree – which results in a substantial monetary savings.

In order to be eligible for the AGRADE program, students must satisfy the following criteria:

- Have completed approximately 90 credits of coursework towards the BS degree (be completing the junior year)
- Have earned at least a 3.4 College gpa in completed coursework
- Have earned at least a 3.6 gpa in courses offered by the department of specialization

Students interested in entering the AGRADE program should consult with their advisor during their junior year to discuss their eligibility. All students desiring to pursue the AGRADE option must submit and have approved an AGRADE plan of work, which outlines the required credits of the planned MS degree. This includes the 12-16 credits that will be applied to the undergraduate degree and the remaining credits that will be completed AFTER completion of the bachelor's degree. The student then completes the work for the BS degree and applies to the graduate school following the standard schedule. Once admitted to the graduate school, a graduate transcript is constructed that includes the identified credits that were completed as an undergraduate.

Students typically pursue the AGRADE master's degree in the same department as their undergraduate degree. However, students interested in Biomedical Engineering, Alternative Energy Technology, Computer Engineering, Materials Science, or Manufacturing Engineering as an MS program may choose to this option for their AGRADE program. In this case, advisors in both the undergraduate department and the graduate programs must be consulted and approve the AGRADE plan of work.

Senior Rule

Students who complete their undergraduate degree at Wayne State are encouraged to remain at the University for a Graduate Degree. As an added bonus for students who are in the last semester of their undergraduate program, the University has developed a program called Senior Rule. In this program, graduate-level courses beyond the requirements for the bachelor's degree may be taken in the last undergraduate semester and then applied to a graduate degree program. All courses taken in the final semester will have upper division tuition rates applied, rather than graduate tuition rates.

Students interested in Senior Rule should meet with their academic advisor during the last semester of their junior year. *Interested students must have at least a 3.0 gpa in their upper division courses in order to be eligible for the program.* The general guidelines for applying for Senior Rule are:

- a. Request a complete degree audit from your academic advisor to ascertain what semester will be the last of the undergraduate program.
- b. Develop a plan of work for the remaining undergraduate degree requirements.
- c. If the final semester will include less than 16 credits of undergraduate coursework, you may be eligible for Senior Rule.
- d. Meet with the graduate advisor of the program that you are interested in to determine a graduate plan of work. Determine which courses on the Plan of Work would be appropriate to take during the final semester of your undergraduate program.
- e. Apply to the graduate program of your choice. NOTE: To be eligible for Senior Rule, you MUST be eligible for admission to the graduate program in which you plan to take courses.
- f. If admitted to the Graduate Program, you will be granted a Temporary Admit during your final undergraduate semester.
- g. At the time of registration for the graduate course, you must file a Concurrent Registration form with the registrar. This will notify the University Records Office of the need to put the graduate courses on your graduate transcript.

UNDERGRADUATE ADVISING CONTACTS

Associate Dean for Academic Affairs

Dr. Jeff Potoff, PhD

Michelle McGrann, Assistant

1513 Engineering Development Center

313 - 577 - 3040

Biomedical Engineering

Namrata Murthy

2201 Biomedical Engineering Building

313 - 577 - 1345

nmurthy@wayne.edu

Chemical & Material Science Engineering

Tracy Castle

1106 Engineering

313 - 577 - 3716

tfcastle@wayne.edu

Civil and Environmental Engineering

Elizabeth Hill

2163 Engineering

313 - 577 - 9850

ekondrat@wayne.edu

Computer Science Advising Liaison for Macomb and

Oakland Counties:

Colleen McKenney

5057 Woodward (Maccabees Bldg), #3010

313 - 577 - 2406

colleen.mckenney@wayne.edu

Computer Science Advising Liaison for Wayne, Washtenaw and Monroe Counties:

Stephanie Chastain

5057 Woodward (Maccabees Bldg), #3010

313 - 577 - 8834

schastain@wayne.edu

Electrical and Computer Engineering

Emily Reetz

3116 Engineering

313 - 577 - 2692

ereetz@wayne.edu

Engineering Technology

Joyce Pei - Hsuan Lien

1159.1 Engineering Technology Building

313 - 577 - 0802 joycelien@wayne.edu

Industrial and Systems Engineering/Study Abroad Liaison

Gail Evans

2045 Manufacturing Engineering Building

313 - 577 - 2660

gevans@wayne.edu

Mechanical Engineering

Keith Wadley

2129 Engineering

313 - 577 - 5939

keith.wadley@wayne.edu

First Year/Transfer/Undecided Advisor & Eos Program

Casey Rue

1171 Engineering

313 - 577 - 8750

crue@wayne.edu

Engineering Career Resource Center

Cedric Brooks

1524 Engineering Development Center

313 - 577 - 8336

cedric.brooks@wayne.edu

Use Handshake to schedule appointments

<http://engineering.wayne.edu/students/careers.php>

Assistant Dean of Student Services

Sondra Auerbach

1503 Engineering Development Center

313 - 577 - 0248

sondra.auerbach@wayne.edu

Director of Community Engagement, Outreach Specialist

Jasmine Roberson

Science & Engineering Library

5048 Gullen Mall, Room 58

313 - 577 - 0237

jasmine@wayne.edu

All engineering students must meet with their engineering advisor on a regular basis. Meetings with pre - professional, pre-med or honors advisors are supplemental and must not replace advising by the Engineering staff.