

Wayne State University
College of Engineering
Handbook for Pre-Professional Students

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Preface

This *Handbook* is provided for students in the pre-professional programs in the College of Engineering. While many of the requirements of the pre-professional program are common among undergraduate degree programs, there are some minor differences. As a result, students are encouraged to declare their intended undergraduate major as early as possible. This will allow students to seek academic advising from the advisor assigned to their degree program and refer to the policies and program requirements outlined in the program's *Undergraduate Handbook*.

All students are responsible for knowing and following the policies outlined in this *Handbook*, the *Undergraduate Handbook* of their degree program, 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 the *Undergraduate Handbooks* published by each academic department. 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 Associate Dean for Academic Affairs, the undergraduate Academic Advisors, or the Director of Undergraduate Studies of a student's major department.

Students who enroll in the Division of Engineering Technology do so after earning an Associates Degree in a technological field. As such, they are not subject to the same pre-professional requirements as are students in the Division of Engineering. Engineering Technology students should refer to the *Engineering Technology Handbook* and consult with advisors within the ET program.

Policies described in this Handbook pertain to students admitted to the College of Engineering during or after the Winter 2004 semester. Students admitted prior to this semester should consult with their advisor to determine the policies by which they are governed.

Note: Portions of this Handbook are taken directly or indirectly from the Undergraduate Bulletin of Wayne State University.

College of Engineering

Mission: The College of Engineering has three important missions: teaching, research, and outreach. The latter includes serving the region, state, and nation as part of an urban comprehensive research university. Graduates of the College of Engineering are prepared for professional practice, graduate study, and lifelong learning. Faculty members, with contributions from undergraduate and graduate students, develop the scientific and technological basis for the advancement of the engineering profession. They disseminate this advanced technical knowledge to engineers, other professionals, and the public. A balance among the three missions is sought through a partnership built among students, faculty, staff, alumni, government, and private industry. This can be achieved by maintaining an academic environment that is both intellectually stimulating and supportive of all of its constituents, regardless of race, gender, or ethnic background.

College Organization: The College is divided into two divisions: the Division of Engineering and the Division of Engineering Technology. The Division of Engineering includes six academic departments, five of which offer Bachelor of Science programs: Chemical Engineering and Materials Science, Civil and Environmental Engineering, Electrical and Computer Engineering, Industrial and Manufacturing Engineering, and Mechanical Engineering. These departments, along with the Department of Biomedical Engineering, also offer programs leading to Master of Science and Doctor of Philosophy degrees. The Division of Engineering Technology offers five programs leading to a Bachelor of Science in Engineering Technology as well as a graduate program leading to a Master of Science in Engineering Technology.

Accreditation: The Bachelor of Science programs, with the exception of the new Biomedical Engineering program, of the Division of Engineering are accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). The Electrical/Electronic Engineering Technology program and the Mechanical Engineering Technology programs of the Division of Engineering Technology are accredited through the Technology Accreditation Commission (TAC) of ABET. Curriculum accreditation is based on careful, periodic appraisal of the faculty, educational programs, and facilities of the College. Such accreditation is recognized by other universities, prospective employers, and state professional licensing agencies.

ABET

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Undergraduate Programs

Each undergraduate program in the College of Engineering offers a strong program designed to prepare students for the profession of engineering as well as graduate and professional education. The opportunities for students who graduate from each of the degree programs are broad. Below is a brief description of each field of undergraduate study in the College of Engineering. This should only be used as an introduction to the field – further discussion of opportunities should be held with department faculty, other students, alumni, and industrial contacts.

Biomedical Engineering - Biomedical engineers apply engineering, math, and science to the solution of problems related to the human body. This includes challenges pertaining to disease diagnosis and treatment, design of implants for the human body, and analysis of how various environmental factors – either external or internal – affect the cells and tissues of the human body. Biomedical engineers generally have both a broad engineering foundation and a selected depth that builds on one of the traditional fields of engineering – for example, chemical, electrical, industrial, or mechanical engineering. Following graduation, biomedical engineers may seek an immediate job in industry, seek advanced education in biomedical or other fields of engineering, or attend professional school – including medical school, dental school, and law school.

Chemical Engineering – The field of the chemical engineer embraces those industries in which matter is treated to affect a change of state, energy content, or composition; and in these industries, the chemical engineer may be concerned with either the processes or the process equipment used for them. The chemical engineer may enter the fields of petroleum processing, pharmaceuticals, food processing, natural and synthetic rubbers and plastics, electronic materials, surface coatings, atomic energy processing, environmental control, and biotechnology. The undergraduate program in chemical engineering includes a thorough study of chemistry, mathematics, and physics, as well as an understanding of physical, biological, and chemical operations and processes. Engineering courses cover material and energy balances, transport phenomena, reaction kinetics, and process and equipment design. In addition, electives may be chosen from topics such as polymers, biochemical engineering, pollution control, materials science, biomaterials, and other special topics.

Civil Engineering – Civil engineers apply the principles and techniques of engineering to the design and integration of complex systems. They have traditionally been leaders in many aspects of urban development, including such diverse areas of concern as: the design and control of structural systems, including tall buildings, bridges, and transportation systems necessary for urban development, commerce and industry; water resources planning and management; containment and treatment of hazardous wastes; design of collection and treatment systems for sanitary and storm sewage; water treatment and distribution systems; construction management; and the integration and management of public works projects designed to improve the urban infrastructure. The responsibilities of the civil engineer directly involve the health, safety, and welfare of the public. The civil engineering curriculum has been designed to provide a broad education in the basic sciences, mathematics, and engineering sciences, civil engineering analysis and design, and their applications to civil engineering practice.

Electrical Engineering – In the field of electrical and computer engineering, basic physical and mathematical principles are utilized to develop new devices, technologies, and techniques of constantly broadening application. Examples are the development, stemming from advances in solid-state and integrated circuit technology, of smaller, cheaper, and more powerful computers, microprocessors, and other data processors, and their utilization in a growing range of systems applications; the growing use of data communications and sophisticated communication networks; the use of lasers, and the development of fiber optic and integrated optical devices for various applications, ranging from optical data processing to communication; development of sophisticated control techniques, smart sensors, and transducers for advanced automation and electric power systems; the application of electronics to health care and diagnostics (such as noninvasive measurements and ultrasound imaging); and energy conversion devices. In the freshman and sophomore years, students acquire a foundation in the principles of science and mathematics required for the study of engineering. Basic concepts of electrical circuits, electronics, computers, and electromagnetic fields are studied after prerequisite mathematics and science backgrounds are mastered. In the senior year, a choice of electrical and computer engineering electives permit the student to specialize in one or more areas. All graduates in the department earn a Bachelor of Science in Electrical Engineering, and may elect a concentration in either electrical or computer engineering.

Industrial Engineering – The industrial engineer is a broadly-trained engineer, concerned with enabling complex systems to function effectively. Managing the inventory of a production facility, for example, involves issues of production and stocking policy, manufacturing equipment, human resources, customer demand, and supplier relationships. The industrial engineer must understand the interaction of the components of a system and coordinate the flow of materials and information to effectively manage the operation. The industrial engineer plays an important role in defining information needs and developing strategies for decision making based on incomplete knowledge. However, the skills of the industrial engineer have much greater application than to traditional production environments. In a growing service sector of the economy including health care delivery, public safety, air transportation, and banking, for example, issues of resource management, scheduling, quality of service, and systems design are important. Traditionally, the manufacturing engineer was responsible for developing the process capability to realize the output of design engineering. Today, however, the boundary between design and manufacturing engineering is becoming blurred. Both groups work together in teams to assure the soundness of design and producibility of products. The manufacturing engineer must have an understanding of the design process, but the special expertise that is brought by the manufacturing engineer is the knowledge and understanding of the production process. All students work towards a Bachelor of Science degree in industrial engineering, with a manufacturing engineering option available for interested students. The common core curriculum includes a strong foundation in mathematics, science, engineering theory, data analysis and statistics, engineering economics and the work environment. This background is enhanced with advanced and elective courses in industrial processes, manufacturing engineering, and quality and production control.

Mechanical Engineering – The opportunities and challenges in the field of mechanical engineering are many and diverse. The broad variety of career possibilities includes research and development, design analysis and synthesis, manufacturing and production engineering, testing, sales engineering, maintenance and administration. The challenge of a mechanical engineer may lie in the perfection of a device that will duplicated a million-fold or in the control

optimization of a single complex system of unique design. To prepare students for these opportunities, the undergraduate mechanical engineering curriculum is designed to give a basic core education in the humanities, mathematics, natural sciences, basic applied sciences, and engineering fundamentals as well as to provide advanced electives in many applied fields.

Admission to the College of Engineering

Recommended Background: Degree programs in Engineering require substantial work in mathematics, physics, chemistry, and other sciences, in addition to a strong ability to communicate both in written and oral forms. In order for students to have sufficient background to make adequate progress in the scientific, engineering, and communications requirements of the degree program, the following program of high school preparation is recommended:

- English: 4 years
- Algebra: 2 years
- Plane and Solid Geometry: 1.5 years
- Trigonometry: 0.5 years
- Physics: 1 year
- Chemistry: 1 year
- Social Sciences or Foreign Language: 2 years
- Electives: 3 years

An incoming freshman with this background may enter the regular, scheduled program in Engineering if he/she earns satisfactory scores on the qualifying examinations in mathematics, chemistry, and English (see below). Students who have only two years of the above mathematics along with only one year of physics, chemistry, or biology may be admitted to the College of Engineering. However, proficiency in the above subjects must be obtained through supplementary course work before entering the normal, freshman-engineering schedule. Students also have the option of completing courses at a community college to provide this required background before applying to the College of Engineering and Wayne State.

Entering Freshmen: Admission of students to the College of Engineering directly from high school is dependent on high school g.p.a. and ACT or SAT scores. Students may be admitted to either the professional engineering program, the pre-professional program, or the Engineering Bridge program depending on their educational background and placement examination results.

Transfer Students: Applicants to the College of Engineering who have completed college-level studies at a community college or 4-year university are evaluated based on gpa and the level of curriculum completion at the previous institution(s). Students may be admitted to either the professional engineering program, the pre-professional program, or the Engineering Bridge program depending on their educational background and placement examination results.

NOTE: Admission to the Biomedical Engineering program requires a separate application and is highly competitive. For more information, please visit the Biomedical Engineering program web page.

Admission Requirements: The following table outlines the requirements for admission into each program:

Program	Admitted From	Minimum gpa	Minimum Test Scores	Required Course Background/Placement
<i>Professional Program in Major of Choice</i>	High School	3.5 overall and in science/math	Math ACT: 29* Math SAT: 690	Placement into MAT 2010, CHM 1225/1230, and ENG 1020
	Community College or 4-Year University	3.0 overall and in science/math	NA	Equiv to MAT 2010, 2020, 2030, 2150; PHY 2175, 2185; CHM 1225/1230 with no grade lower than a C
	Pre-Professional Program (at WSU)	2.5 in pre-professional courses	NA	Completion of pre-professional program with no grade lower than a C-
<i>Pre-Professional Program</i>	High School	3.0 overall, 3.0 in math and science	Math ACT: 26* Math SAT: 650	Completion of courses in pre-calculus, physics, and chemistry; Placement into MAT 1800 and CHM 1225/1230
	Community College, 4-year University or WSU Program	2.8 overall, 3.0 in math and science	NA	
	Bridge Program	3.0 in Bridge courses	NA	Completion of Bridge courses
<i>General Engineering Program</i>	Community College, 4-year University	Minimum of 12 credits with 2.0 or greater	NA	Placement into MAT 1800 or higher
<i>Engineering Bridge Program</i>	High School	2.0 overall (w/ ACT) or 2.75 overall (no min Comp ACT)	Comp ACT: 21 Math ACT: 18 Comp SAT: 950	University requirements (NOTE: 18 Math ACT required for all entering freshmen)
	Community College	Minimum of 12 credits with 2.0 or greater	NA	University requirements

Transfer students who place into MAT 1800 or higher but do not qualify for the pre-professional program (e.g. 2.8 overall gpa, 3.0 math/science gpa) will be placed in the General Engineering program. These students must meet with the Associate Dean for Academic Affairs to develop an academic contract in order to improve their foundation in math and science before advancing in

* Incoming freshmen who place into the listed math course (or higher) based on AP credit, dual enrollment credit, or the mathematics placement exam, but whose Math ACT score does not meet the listed level, may petition for acceptance into the pre-professional or professional program.

the program. The academic contract may include pre-professional engineering courses at the Associate Dean's discretion. However, the contract must be successfully completed before the student is allowed to advance in his/her selected program.

Students who do not qualify for the Bridge Program, including those with a Math ACT of 17 or lower, will be placed in the College of Liberal Arts and Sciences (CLAS). Students may work towards transfer admission into the College of Engineering at a later date if they wish by completing math and science courses offered through CLAS. Internal transfer students will be expected to meet the criteria for acceptance into at least the pre-professional program before a program change into Engineering will be approved.

Advising

Advising for undergraduate students enrolled in the professional and pre-professional programs within the College of Engineering comes from four sources:

- Academic Advising Staff: Responsible for assisting students with development of a plan of work, selection of general education and elective courses, and maintaining academic progress. Enforce College of Engineering and University academic policy. Can assist students with paperwork required to transfer between pre-professional and professional programs as well as between departments within the College.
- Departmental Directors of Undergraduate Studies: Responsible for enforcing Departmental academic policy. Requests for waivers of Departmental policy should be addressed in writing to the Director of Undergraduate Studies of your home department. In the case of policy regarding courses offered by other departments (for instance Mechanical Engineering students taking ECE 3300), requests for waivers may be referred to the Director of Undergraduate Studies of the offering department. These faculty are also a valuable resource for information on selecting technical elective courses and may provide links to potential academic and industrial mentors.
- Associate Dean for Student Affairs: Responsible for student recruiting and retention programs. The Associate Dean is the point of contact for academic support services (including tutoring), career resources, and student organizations. The Associate Dean for Student Affairs also serves as the Judicial Officer for the College of Engineering.
- Associate Dean for Academic 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.

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. These meetings are required in the semester following a student's advancement into the pre-professional or professional program of their major.

Engineering Bridge Students are **REQUIRED** to meet with the Bridge Advisor each semester before registration. An advising hold will be placed on each student's record to help with the enforcement of this policy. The hold can only be removed after a student meets with the Bridge Advisor – such meetings should be planned before the end of the registration period.

Placement and Qualifying Examinations

Many of the subjects in the undergraduate engineering curriculum require students to take placement or qualifying examinations before their first class at Wayne State. In order to prevent a delay in registering for courses in the undergraduate curriculum, students must take these examinations before their first semester of courses at Wayne State.

Chemistry Qualifying Examination: The sequence of chemistry courses for an undergraduate degree in engineering begins with CHM 1225 and CHM 1230. Qualification for these courses requires students to obtain a satisfactory score on the Chemistry Qualification Examination. Students without adequate background in Chemistry to obtain the necessary score on the Qualification Examination should enroll in CHM 1040. Students with transfer (C or higher) or AP exam credit for CHM 1220/1225 do not need to take the qualifying exam.

English Placement Examination: All entering freshmen and transfer students shall determine their aptitude in English composition by taking the English placement examination or through their ACT English score. Students who have taken the ACT examination within 2 years of their desired enrollment in an English course can qualify for ENG 1020 based on an ACT-English score of 21 or higher. Students whose score on the English placement examination indicates need for additional instruction and practice in writing must elect and pass ENG 1010 before they can enroll in ENG 1020 or ENG 1050. Students with transfer (C or higher) or AP exam credit for ENG 1020 do not need to take the placement exam. *Students without current ACT scores may not enroll in ENG 1010 instead of taking the English Placement Examination. Therefore, students without either current ACT scores or transfer credit for ENG 1020 MUST take the English Placement Exam.*

Mathematics Qualifying Examination: The sequence of mathematics courses for the engineering student normally begins with MAT 2010. In order to register in MAT 2010, students must qualify based on either a recent (< 2 years old) Math ACT score or an appropriate result on the math qualifying examination. Students who do not qualify for MAT 2010 will start in MAT 0993, MAT 1050, or MAT 1800 depending on their Math ACT scores or results on the Math Qualifying Exam.

If students have Math ACT scores that are less than 2 years old at the time they wish to register for their initial math course, these scores can be used for math placement. The most recent Math ACT score is used for this purpose.

MAT 2010	29 or higher
MAT 1800	26 to 28
MAT 1050	21 to 25
MAT 0993	20 or lower*

Students who do not have recent Math ACT scores or who believe that they should place into a higher math course may apply to take the Qualifying Examination. If Math ACT scores are still

* Students must have a Math ACT score of 18 or higher to be admitted into the College of Engineering.

valid, the course placement will be based on the higher result of the two (e.g. a student who places into MAT 1800 with a 27 Math ACT will remain eligible to start in that course even if they have a poor result on the Qualifying Exam).

When sitting for the exam, students can elect to take the exam with a maximum placement into either MAT 1800 or MAT 2010, depending upon their preparation in mathematics. The MAT 1800 Qualifying Examination is based on 1.5 years of high school algebra and 1 year of high school geometry. The MAT 2010 Qualifying Examination is based on 3.5 years of college-preparatory mathematics, including algebra, plane and solid geometry, and trigonometry.

Engineering students should not take MAT 0995, as it does not prepare them for their additional required mathematics courses. If required to take MAT 1050, all Engineering students are required to take the 7-credit (PREP) version of the course.

Engineering students who do not have recent Math ACT scores and do not take the Mathematics Qualifying Examination prior to registration for the first semester of the freshman year must enroll in MAT 0993.

Transfer students who do not transfer in credit equivalent to MAT 2010 must take the Mathematics Qualifying Examination, even if they are transferring in credit equivalent to a lower-level math course. ***Transfer students who have received a grade of C- or lower in Calculus 1 must also take the Mathematics Qualifying Examination in order to retake MAT 2010.*** (NOTE: The College of Engineering does not accept a transfer grade lower than a C for courses, including mathematics. Thus, transfer courses that do not meet this criterion must be repeated.)

Students who have received Advanced Placement credit equivalent of MAT 2010 may enroll in MAT 2020 without taking the Mathematics Qualifying Examination.

If students wish to take MAT 2010 for personal reasons even after receiving credit from an outside source (AP or transfer) (e.g. to refresh their knowledge in the subject), they must take the Mathematics Qualifying Examination before registering for the course.

Results from the Mathematics Qualifying Examination are good for three semesters – the semester immediately following the date when the exam is taken and the subsequent two semesters. This includes Fall, Winter, and Spring/Summer semesters. If a student does not enroll in the appropriate mathematics course within two semesters, they must retake the examination.

Once the mathematics sequence is entered, progression is governed by the policies of the Mathematics Department. A grade of CNC (MAT 0993 or MAT 0995) or of at least C- (MAT 1050 or MAT 1800) within the past two semesters (at Wayne State) is required for progression to the next course in the sequence. Students who have delayed their progression in this early sequence may re-enter it by taking the Mathematics Qualifying Examination a second time. Once students satisfactorily complete MAT 2010, there is no time limit on progressing to the next course. However, Engineering students are encouraged to complete their math sequence as early as possible.

Biology Placement Exam – Effective with the Winter 2009 semester, students wishing to take BIO 1510 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. Students who plan on taking BIO 1510 at WSU are encouraged to register for the course early in their curriculum if they have the appropriate ACT score in order to take advantage of this placement option. Please see your advisor regarding options for scheduling BIO 1510.

Engineering Bridge Program

The Engineering Bridge program is designed for students who have an interest in engineering but who have not demonstrated that they have the science or mathematics background required in order to start the outlined four-year curriculum in Engineering. The Bridge program will provide students with the necessary background in mathematics, physics, chemistry, and English to succeed in the College of Engineering program of their choice. Required Basic Engineering courses stress problem solving, communication, and teamwork skills essential to being a successful engineer. The Bridge curriculum is designed as a 2-semester sequence requiring full-time study. (Students who are unable to attend the University full-time during the Bridge program are encouraged to complete their prerequisite courses at a local community college and then transfer to Wayne State. Students who wish to remain at Wayne State should consult with the Associate Dean for Academic Affairs to develop a suitable plan of work.)

Bridge Curriculum

The standard Engineering Bridge Program occupies two to three consecutive academic semesters, depending on initial math placement:

<u>MAT 0993 Placement</u>		<u>MAT 1050 Placement</u>	
<i>Fall Semester:</i>		<i>Fall Semester:</i>	
MAT 0993	3 cr	MAT 1050 (PREP version)	7 cr
PHY 1020	4 cr	PHY 1020	4 cr
ENG 1010 ¹	4 cr	BE 1001	0 cr
BE 1001	0 cr	BE 1050	2 cr
BE 1050	2 cr	<i>Total</i>	<i>13 cr</i>
<i>Total</i>	<i>13 cr</i>		
<i>Winter Semester:</i>		<i>Winter Semester:</i>	
CHM 1040 ¹	4 cr	CHM 1040 ¹	4 cr
MAT 1050 (PREP version)	7 cr	MAT 1800	4 cr
BE 1001	0 cr	MAT 1900 (ESP)	2 cr
BE 1060	1 cr	ENG 1010 ¹	4 cr
<i>Total</i>	<i>12 cr</i>	BE 1001	0 cr
		BE 1060	1 cr
		<i>Total</i>	<i>15 cr</i>
<i>Spring/Summer Semester:</i>			
MAT 1800	4 cr		
<i>NOTE: MAT 1990 (ESP) is generally not offered during the spring/summer semester.</i>			

¹ Students who place into CHM 1225 or ENG 1020 are not required to take the lower level courses as part of the Bridge program and can substitute other General Education courses or the appropriate-level Chemistry and English course if other prerequisite/co-requisite requirements are satisfied.

Advancing to Pre-Professional Status

Students who complete the Bridge program with a gpa of 3.0 or above, and no grade lower than a C- in required Bridge courses, are eligible for transfer into the pre-professional program of their choice. Within the Bridge Program curriculum, students are allowed only two substandard grades (grades less than C-). These courses must be repeated.

If students earn satisfactory grades (C- or above) in all Engineering Bridge courses but still do not achieve the minimum (3.0) gpa to advance to pre-professional status, further enrollment in the College of Engineering must be through a contract developed with the Associate Dean for Academic Affairs. This contract will most likely include the repeat of a course or courses already completed in order to raise the student's Bridge gpa. These repeated courses will be selected to provide the student with the math and science foundation required to succeed in further engineering study. Students who do not meet the contract requirements will be asked to transfer to a program outside of the College of Engineering.

Options Outside of Engineering

Some students who initially want to study engineering find that they wish to pursue other fields once they begin to explore the field at University. Other students may determine that they do not enjoy or have the aptitude for the advanced math and science required for engineering. The decision to select a field of study that meets a student's interests and aptitudes should be applauded – whether that is within engineering or one of the other dozens of options at Wayne State. Students are encouraged to use the year of the Engineering Bridge Program to confirm their interest in and aptitude for engineering or to find another program outside of engineering that better meets their needs.

Students who wish to transfer to a program outside of Engineering are encouraged to meet with advisors in the Career Services Office to assess their aptitudes and interests. Transfer to programs in other schools or colleges must be requested through the appropriate advising group:

- Business– School of Business Administration Advisors (200 Prentis Building)
- Education – School of Education Advisors (4th Floor, Education Building)
- Fine, Performing, and Communication Arts – University Advising Center (1st Floor Undergraduate Library)
- Liberal Arts and Sciences – University Advising Center (1st Floor Undergraduate Library)
- Pre-Professional Programs (Nursing, Pharmacy and Allied Health, Social Work) – University Advising Center (1st Floor Undergraduate Library)

If, in the assessment of the Associate Dean for Academic Affairs, a student demonstrates that they are not likely to be successful in Engineering based on their performance in the Bridge Program, the student will be required to transfer to another school or college at the University before being able to register for additional courses. Students who refuse to comply with this requirement may be officially excluded from the College of Engineering. It is strongly recommended that these students meet with an advisor from Career Services to assess areas for which they have the greatest aptitude and interest.

Students who still have an interest in studying engineering may consider reapplying to the College after requirements for admission to the pre-professional program have been satisfied (see *Admissions*). Once a student has transferred out of the College of Engineering, these required courses may be taken either at

Wayne State or a local community college. As is the case for all transfer (internal or external) students, the minimum required gpa is a 2.8 overall with a 3.0 in math and science courses. Appropriate math and science courses, including physics, must be completed to allow the student to register for at least MAT 1800 and CHM 1225. Readmission to the College is not guaranteed. An academic record with high numbers of repeated or substandard grades, particularly in math and science, will prevent readmission.

For those students who elect to pursue a major outside of the College of Engineering, the following Bridge courses will satisfy General Education requirements for the University:

PS – Physical Science:	PHY 1020 (w/ Lab)
MC – Math Competency	MAT 1050

MAT 1800, CHM 1040, BE 1050, and BE 1060 will generally count as elective credits and apply to a student's major program. Students who have completed ENG 1010 with a satisfactory grade will also be eligible to register for ENG 1020, which is required of all undergraduates. Thus, the majority of the credits earned during the Bridge program can be applied towards another undergraduate program if a student makes such a decision.

Non-Standard Paths through the Engineering Bridge Program

The general outline of the Engineering Bridge program is designed for students who enter in the Fall semester. Those entering in the Winter should consult with the Bridge Program advisor to determine how the program will be modified. Students who are also enrolled in the Chicano-Boricua Studies (CBS) Program will work with the CBS advisor to develop an extended program contract that will allow completion of the requirements in both the Bridge Program and the CBS Program.

Academic Advising

Engineering Bridge Students are REQUIRED to meet with the Bridge Advisor each semester before registration. An advising hold will be placed on each student's record to help with the enforcement of this policy. The hold can only be removed after a student meets with the Bridge Advisor – such meetings should be planned before the end of the registration period.

Pre-Professional Program

The purpose of the pre-professional program is to provide students who are not qualified for entry into a professional engineering program with the opportunity to enroll in a restricted set of courses that can be applied to the Bachelor of Science degree in their chosen major. The general pre-professional program in engineering consists of the following required courses:

- *Mathematics*: MAT 2010, MAT 2020, MAT 2030
- *Physics*: PHY 2175, PHY 2185
(NOTE: students interested in ECE should take PHY 2170/2171 instead of PHY 2175)
- *Chemistry*: CHM 1225, CHM 1230
- *Core Engineering*: BE 1200, BE 1300, BE 1310
- *English*: ENG 1020

Each department has also identified courses that must be completed by pre-professional students before applying for transfer to the professional engineering program in their discipline.

Chemical Engineering:

- Chemistry: CHM 1240/1250, CHM 2220, CHM 2280
- Chemical Engineering: CHE 2800

Civil Engineering:

- Civil Engineering: CE 2410

Electrical Engineering:

- Physics: PHY 2170/2171 (in place of PHY 2175)
- Electrical Engineering: ECE 2610

Industrial Engineering:

- No additional courses

Mechanical Engineering:

- Mechanical Engineering: ME 2200, ME 2410 (must also complete ME 2050, though this course is not included in the pre-professional gpa calculation)

In addition to the pre-professional courses, ***students must satisfactorily complete the Critical Thinking Exam*** before applying for transfer to the professional programs. Details regarding this exam is available in the section on General Education Requirements.

Students can choose to apply to the professional engineering program of their choice before or after completing MAT 2150, BE 2100, and BE 2550. However, these courses must be completed successfully before any course is taken for which they are a pre-requisite. Students may not register for any 3000-, 4000-, or 5000-level engineering course until they have successfully completed the pre-professional program and transferred to the professional program.

It is imperative that students realize that they are not allowed to register for engineering courses not on the above list before being granted admission to the professional engineering program of their major department. Students who inappropriately register for these courses will be administratively withdrawn. This includes any 5000-level or higher courses in Engineering, which are limited to graduate students and advanced undergraduate students.

Transfer to the Professional Program

In order to transfer from the pre-professional program to a professional engineering program, a student must have a minimum gpa of 2.5 in the courses designated as part of the pre-professional program (see above). This gpa is calculated based on these courses alone and **DOES NOT** include performance in non-technical General Education requirements, prerequisite courses not specified above, or other courses elected by the student.

Calculation of this pre-professional gpa will include the highest grade earned in a course and will include all listed courses, whether they were completed at Wayne State or transferred in from another institution. Students who do not meet this minimum pre-professional gpa will be required to repeat courses at the community college or Wayne State in order to meet this minimum requirement.

Transfer students who have completed the math, science, and English courses listed above with at least a 3.0 gpa will be allowed to concurrently register for professional engineering courses (if they have the prerequisites) while completing the BE 1200, BE 1300/1310, departmental engineering, and CT requirements. Such students will be expected to satisfy these remaining requirements within two semesters of matriculating at Wayne State in order to continue enrollment in professional engineering courses.

Students who complete the pre-professional curriculum but do not meet the necessary gpa requirement should meet with the Associate Dean for Academic Affairs to determine if a Plan of Work can be developed that will allow the student to demonstrate greater academic mastery of the technical subjects and also elevate his/her gpa. This Plan of Work may include repeating courses, according to the College's course repeat policy (see Academic Progress and Probation), or taking additional courses in mathematics, science, engineering, or English that may not count towards the degree requirements. Students who do not complete the Plan of Work so as to raise their gpa to the required level within a stipulated period of time will be excluded from the College.

Honors Program

Students in the College of Engineering have the option of pursuing their degree through the Honors College. Admission to the Honors College is by application only – both freshmen and continuing students are eligible to apply. Students may begin to pursue Honors while in either the professional or pre-professional program. However, to enter as a freshman, students must qualify for direct admission to the professional program.

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 11 credits of honors coursework in Engineering.

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

- Have achieved high academic standards for admission:
 - Enter the University with a 3.5 overall grade point average from High School, a minimum of a 26 on the Math ACT, and be admitted to one of the Professional Programs in Engineering (placement into MAT 2010 or higher); OR
 - Have earned a minimum of a 3.5 grade point average after at least 24 credits of University coursework and be enrolled in one of the Pre-Professional or Professional Programs in Engineering
- 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 VP, HS, AI, or FC requirements. This will then meet the student's general education requirement in this area. (NOTE: Students should not select HON 42XX sections that satisfies SS or PL credit, as these must be satisfied through specific courses specified by their department. Students who wish to consider an HON 42XX section that satisfies LS credit should contact the Associate Dean for Academic Affairs for evaluation of the course.)
- 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 technical elective in the student's home department, similar to a directed study course, based on Departmental policy. This course counts towards the 11 required honors credits in Engineering.
- BE 2550 – Basic Engineering IV: Computer and Numerical Applications in Engineering (Honors Section) (3 cr)
Students must elect the Honors Section of BE 2550 to satisfy this College-wide requirement. The Honors Section will include more challenging problems and projects. This course counts towards the 11 required honors credits in Engineering.

- Departmental Honors Course

Students must complete at least one honors course within their departmental major requirements. This can be a 4000- or 5000-level course in which the Honors Option is selected, the departmental AGRADE-designated design course, or (for students enrolled in the AGRADE program), any course on the undergraduate portion of the AGRADE plan of work.

This course will count towards the 11 required honors credits in Engineering. Any additional courses taken under this classification (e.g. additional AGRADE courses) will also count towards the total count of Honors credits for either Engineering or University Honors.

The required courses listed above, which satisfy Engineering and University Honors requirements, cover 14 to 15 credits of the overall requirement of 24. The remaining 9 to 10 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 1410 (in place of CHM 1225/1230)
- CHM 1420 (for Chemical Engineering students)
- ECO 2010 or ECO 2020
- ENG 1050 (in place of ENG 1020)
- 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, including City I and City II

Students who wish to earn University Honors must, starting in Fall 2008, complete an additional 12 credits of Honors coursework beyond the Engineering Honors requirements. This can be done through courses that satisfy regular Engineering graduation requirements, either through general education, math and science, or Honors Option courses in Engineering, as listed above.

Students are encouraged to elect Honors sections for all of their courses for which it is available – especially in the technical and engineering areas. There is no limit to the number of honors courses that can be taken while an undergraduate, and the additional challenge and accomplishment in these classes will set an Honors student apart from other Wayne State graduates.

Freshmen who are accepted directly into the University Honors Program will be required to complete a two semester sequence of courses (HON 1000 - City I and PS 1010 - City II/American Government) in their first year that integrate traditional general education topics with the concept of the urban environment as a laboratory and service learning. The College of Engineering is working directly with the Dean of the Honors College, Dr. Jerry Herron, to insure that this course sequence also satisfies Engineering program requirements. Students in the Freshman Honors Program should consult with the Associate Dean for Academic Affairs for assistance in determining how these courses fit into their undergraduate curriculum. (Waivers to this scheduling requirement are made for Engineering students

where it is determined that the courses cannot be integrated into a reasonable schedule for the freshman year.)

If appropriate courses are selected, completion of the Engineering Honors Program will not require any additional credit hours over the standard Engineering degree requirements. Students should consult regularly with an Engineering advisor in order to make the most effective selection of courses.

Honors and AGRADE

Honors students retain the option of entering the AGRADE program at the end of their junior year. Students must meet with their advisor to establish an AGRADE Plan of Work, to include 12-16 credits from their BS program and the additional 16-20 credits towards their MS. Among the Honors courses that can be applied to the AGRADE Plan of Work are:

- BE 5998 – Engineering Honors Thesis (4 cr)
- Departmental Honors Design Course (4 – 8 cr)

The Honors College accepts courses on an AGRADE plan of work as being completed with the Honors Option. The Honors Advisor should be notified of these courses so that the Honors Option can be noted on the student's record.

Application Procedure

Students interested in entering the Engineering Honors Program should submit a completed Engineering Honors Application to the Associate Dean for Academic Affairs. The application will be reviewed by both the College of Engineering and the University Honors Program to confirm that all eligibility requirements have been met. Students are encouraged to apply as early as possible to the Honors Program – both to be eligible to take Honors sections of courses and to receive the added benefits of being a member of the University and Engineering Honors Programs. However, students may apply to the Honors Program as long as they have at least one semester of coursework remaining at Wayne State and meet the listed qualifications.

NOTE: Students may pursue University and College Honors simultaneously – counting Honors credits towards both.

University Honors Requirements

To graduate with University Honors, students must complete a minimum of 36 credits of honors-designated courses². Honors-designated courses can be found in the following groups:

- Honors program courses
- Honors sections of departmental courses
- Departmental courses open only to honors students
- Honors thesis, essay, or project courses
- Honors option courses

² Students who matriculated at Wayne State prior to Fall 2008 may earn University Honors with 24 credits of Honors courses.

The 36 credits must include the following components:

- A senior thesis, essay, or project in a field of the student's choice
- One HON 42xx –level seminar offered by the Honors Program

Honors credits are often available in courses that satisfy the University's General Education requirements. HON 42xx generally will satisfy General Education requirements, although the sections offered vary between semesters. In addition, students in the Honors Program may replace ENG 1020 with ENG 1050. If the senior project is conducted in the major field, the associated coursework can typically be counted as one of the department's technical electives. These features allow Engineering students to complete a degree with University Honors without a significant increase in the number of credits required for graduation.

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. Final designation of honors-status at graduation, and subsequent documentation on the transcript and diploma, requires the approval of the Director of the Honors Program.

Eligibility

Freshmen: Students admitted to the University with a grade point average of 3.5 are eligible to apply for admission to the Honors College in their first year. Qualified students who are not selected for the limited positions in the Freshman Honors Program may still be eligible to register for honors sections of courses, such as MAT 2010. Interested students should consult with the Honors Advisor.

Transfer Students: Students who transfer into the University from another institution may be immediately admitted to the Honors College if their record includes a cumulative gpa of 3.3 or higher.

Continuing Students: Students who have begun their studies at Wayne State may elect to apply to the Honors College after they have completed a minimum of 24 credits of course work. The minimum cumulative (University) gpa for continuing students for entry into the Honors College is a 3.3.

NOTE: Entrance and continuation requirements for the Engineering Honors Program are slightly higher than for the University Honors Program. Students may be eligible for University Honors but still not eligible for Engineering Honors.

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.

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. The Transfer Credit Evaluation Office will forward to the appropriate department any courses for which there is not an established equivalent so that they may be evaluated.

When examining the Transfer Equivalency Tables, please make note of any date limitations regarding the equivalency of a course. This is particularly important for courses that may satisfy General Education requirements. The General Education category of courses is noted, if applicable, in the Table. The University conducts periodic reviews of courses at other universities to determine if they continue to meet Wayne State General Education objectives, and changes to these assessments will be noted. The applicability of these changes to a student's transfer record is based on the semester in which he/she took a course, not the semester during which he/she entered Wayne State.

A minimum of 34 credits of a student's undergraduate program must be earned at Wayne State. Most of the engineering degree programs have additional restrictions regarding the transfer of upper-level (4000-level and 5000-level) engineering courses towards an undergraduate degree. Please consult your department's *Undergraduate Handbook* for more information.

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.³

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. This approval may be obtained through a Michigan Uniform Guest Permit, which must be signed by the Associate Dean for Academic Affairs or your departmental academic advisor. Approval of the Guest Permit by the Registrar's Office does not insure that the course will be counted towards engineering requirements.

Students who are currently enrolled in the College of Engineering may request permission to take any course, including technical courses (beginning Summer 2009). Permission should be sought from the following individuals:

- Departmental Courses: Department Undergraduate Program Chair
- Math and Science: Department Academic Advisor

³ This policy applies as of Fall 2006 for all degree requirements. Prior to Fall 2006, courses taken to satisfy AI, FC, HS, and VP requirements will be accepted for transfer based on University policy.

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.
- The course must be established as suitably equivalent. Course equivalencies can be found at transfercredit.wayne.edu. Departments have the right to request current course descriptions or syllabi for the proposed course to determine whether or not it is still equivalent to the departmental requirement.
- 4000-level engineering courses are generally not approved for transfer. Departments have the right to determine the approval of 3000-level engineering courses based on their own policies and accreditation outcomes.

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.

Occasionally, errors have been found in the Transfer Equivalency Tables. The College reserves the right to correct such errors and make appropriate adjustments to a student's transfer record. The decision of the College of Engineering concerning course equivalency will be final for Engineering courses.

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.)

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 in the College of Engineering.

Written Communication: The Written Communication Competency is satisfied in four 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 or ENG 1050 (Honors students only)
- 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. This is typically the Capstone Design Project.

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. Transfer students for whom BE 1200 is waived without CL equivalency can satisfy this requirement in one of the following ways:

- Completing successfully a suitable high school course in computing (see University Advising for evaluation of high school record)
- Passing the Advanced Placement exam in Computer Science
- Passing the Computer Literacy Competency Examination
- Successfully completing another approved computer applications course (BE 1200, COM 2050, COM 3210, CSC 1000, CSC 1050, CSC 1100, CSC 1140, CSC 1500, CSC 2110, or higher CSC course, IST 2710, ISM 2630, MED 5590, MUA 5610, or NUR 1110)
- Transfer of a comparable course (with a grade of C or higher)

Computer Proficiency (CP): All Engineering graduate 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 CT examination (described below).

Competency Examinations: The Critical Thinking Competency portion of the University General Education requirements must be met by all students prior to being transferred into a professional engineering program. The Critical Thinking Examination is designed to be taken by students before they earn 60 credits of course work. Engineering students are encouraged to take the exam before completing the program requirements listed in the fall semester, sophomore year of their major curriculum. This will allow students to transfer to the appropriate professional program before they are scheduled to register for professional courses.

The CT competency requirement may be satisfied through examination (recommended) or through satisfactory completion of a designated course. 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.

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

If students wish to apply another listed LS course towards their LS requirement, they must take another, approved science course (e.g. physics, chemistry, or biology) of three credits or more in order to satisfy the ABET requirement for science coursework. This course should be approved in advance by the Director of Undergraduate Studies of the student's major department and should relate to the objectives of the undergraduate major (e.g. geology for civil engineering students.) Students in Industrial Engineering may elect a psychology course that satisfies the LS requirement; however, this will not satisfy the requirements of any other major within Engineering if a change of program is made later. All students wishing to select a course other than BIO 1510 should first seek advice from their academic advisor or Director of Undergraduate Studies.

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

Social Science (SS): Most departments in the College require students to take ECO 2010 or ECO 2020 to satisfy this requirement, as the course satisfies the ABET requirement for education in economics. Students in Industrial Engineering may elect any SS course, as they complete their economics requirement through other course requirements. Transfer students into Civil Engineering should consult with their academic advisor regarding their options. Honors students who took HON 1000 as a freshman are not required to take ECO 2010 or ECO 2020.

American Society and Institutions (AI): Students may elect any course from the AI list.

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

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

Philosophy and Letters (PL): The College of Engineering limits the selection of courses for this subject area, as the course satisfies the ABET requirement for education in ethics. Students should take PHI 1120 to satisfy their PL requirement. Students who have completed substantial work in engineering ethics at another institution may petition to their Department to be allowed to take a different course to satisfy their PL requirement. (Generally this is applicable if another transfer course meets the PL requirement but is not considered equivalent to PHI 1120.) Students wishing to file this petition should include a portfolio outlining their coursework in engineering ethics in support of their request.

Registration for Courses

During Priority Registration and Open Registration (through the second week of class), students should register the WSU Pipeline interface. The following procedures should be followed:

1. Consult the on-line Schedule of Classes for the available times and days for the desired class. (NOTE: There are printed versions of the Class Schedule. However, the web-based schedule available at www.classschedule.wayne.edu is the most up-to-date version of the Class Schedule at any point in time.)
2. Verify the listed prerequisite courses for the desired class from the Schedule of Classes.
3. Check your academic record using the material available via Pipeline for satisfactory completion of the listed prerequisites. Determine if any of the courses were taken at another institution or prior to Fall 1998. If the answer to this is yes, please refer to the procedures in *Prerequisite and Co-Requisite Policies*, below.
4. Register for your courses following the standard procedure. If you receive an error message, please make note of the message. Potential errors include:
 - Time Conflict — Two of the courses that you are attempting to register for overlap in scheduled time. You must obtain an Add/Drop form signed by both instructors and submit this to your advisor in order to have an override processed. Indicate on the Add/Drop form that the reason for the signature is a time conflict (code = TIME).
 - Prerequisite Violation — The system does not have a record of you completing one or more of the listed courses with a grade of C- or higher. Please contact your advisor to review your record. If you have met the prerequisites, an override will be processed to allow you to register. (Refer to Prerequisite and Co-Requisite Policy, below)
 - Co-Requisite Violation — The system expects you to register for two courses concurrently. At the current time, the computer does not refer to your academic record to determine if you have completed the course previously — this has been a long-standing problem. If you have completed the course previously, please contact your advisor to process an override that will allow you to register.
 - Course Closed — Contact the course instructor. If permission is granted for entry into the class, have the instructor sign an Add/Drop form. Indicate on the Add/Drop form that the reason for the signature is a closed class (code = CLOSE). Provide the signed Add/Drop form to an academic advisor so that appropriate permissions can be set.
 - Instructor/Departmental Permission Required — Contact the course instructor or the Director of Undergraduate Studies, as appropriate. If permission is granted for entry into the class, have the instructor or Director of Undergraduate Studies sign an Add/Drop form. Indicate on the Add/Drop form that the reason for the signature is permission required (code = DEPT). Provide the signed Add/Drop form to an academic advisor so that appropriate permissions can be set.
 - Registration Hold — Holds may be placed on a student's record for academic reasons (academic probation) or through other University mechanisms (admissions documentation, tuition balance, insurance requirements, etc.). If the Hold is academic in nature, you should contact your academic advisor to investigate the nature of the hold and determine what steps might be taken to allow for the release of the hold. In the case of other holds, the department

that placed the hold must be contacted (Admissions, Office of International Students and Scholars, Cashier, etc.) so that the reason for the hold can be determined and resolved. The College has no ability to remove holds set by other units in the University.

- Program Violation — Certain courses within the University require students to be enrolled in specific programs in order to register. This includes the 3 credit version of BIO 1510 (Engineering students only) as well as professional engineering courses (3000- and 4000-level, see *Pre-Professional Program*, above). If a Program Violation notice is received, you should contact your academic advisor to determine what the conflict might be. If you are qualified, the advisor can assist with completing the necessary paperwork to transfer you to the desired program.
5. If any overrides were required, you will be able to go back into the web or phone-based registration system after they are processed in order to complete your registration. **EACH STUDENT MUST REGISTER FOR THEMSELVES USING THE WEB. ADVISORS ARE NOT ABLE TO PROCESS REGISTRATIONS.**
 6. The system will not allow students to register for courses in which a prerequisite exists for which they are currently enrolled and have not received a grade. If a student receives a prerequisite error for a course in which he/she is currently enrolled, please choose one of the following options:
 - Defer your registration for the course in question until your grade has posted. In order to take advantage of Priority Registration (and reduced fees) you can register for those courses for which you have already completed the prerequisites and add the other courses at a later date. Students should follow the University guidelines and calendars for registration for courses.
 - Contact your advisor to see if your department will grant a provisional override. Some departments – including Basic Engineering courses – will not generally grant provisional overrides to students pending completion of a course. If a provisional override is provided, this will allow you to register for the course. However, if you receive a grade below a C-, you must withdraw from the new course. This withdrawal will be your responsibility and should be done before the end of the add/drop period (10th class day of the semester). Forced withdrawals after this point will not receive a tuition refund.

Students are advised to register for courses as early in the registration process as possible. Early registration should be completed based on reasonable assumptions regarding the satisfactory completion of courses in which a student is currently enrolled. However, once grades are received, necessary changes to the list of courses should be made. If a provisional override is not available for one or more courses, students should register for those courses that they do not need overrides for in order to avoid late registration fees.

All students are expected to satisfy the listed and implied prerequisites for every course in which they enroll. See *Prerequisite Requirements* below.

Students must be aware of the University Registration Calendar and associated deadlines. Specific dates change for each semester – the following descriptions are provided as general guidelines.

- Courses can only be added to the student's registration through the first two weeks of the semester.
- Students may withdraw from (drop) a course during the first two weeks of the semester and receive a full-tuition refund.
- Adding a class after the end of the second week requires approval from both the instructor and the Associate Dean for Academic Affairs. Late Adds will only be approved in cases in which registration was not possible due to reasons beyond the student's control and only if the student has been attending and fully participating in class. A Drop/Add form signed by the instructor must be provided to the Associate Dean for consideration. If the request is approved, the appropriate override will be set and the student must take the signed and stamped form to the Registration Office for processing.
- During the third and fourth week of the semester, students may withdraw from a course using Pipeline, but no tuition refund will be granted.
- After the start of the fifth week of the semester, students must submit their request to withdraw from a course via Pipeline. Withdrawals require the permission of the instructor. Students should either discuss the withdrawal with their instructor before submitting the request or continue to attend class until the permission has been granted. Following this practice will allow a student to continue with the best chance of academic success if permission to withdraw is denied.

Withdrawal Policy

Students will be allowed to withdraw from any course according to University policy on the following time line:

- Weeks 1 and 2: Student may withdraw on Pipeline and receive a full tuition refund. No notation of the course is made on the transcript.
- Weeks 3 and 4: Students may withdraw on Pipeline; however, no tuition refund is given. No notation of the course is made on the transcript.
- Weeks 5 through 15: Student requires instructor's permission to withdraw from a course. At the time permission is granted, the instructor will submit one of the following three grades:
 - WP: Withdrawal/Pass – student passing course at time of withdrawal
 - WF: Withdrawal/Fail – student failing course at time of withdrawal
 - WN: Withdrawal/No Basis for Grade – student did not submit any work in the course; therefore, there is no basis for assessment at the time of the withdrawal

While students will be allowed to use their own judgment on withdrawals, provided permission is granted by their instructor, all withdrawals noted on the transcript (completed after the end of the 4th week of the semester) will count towards his or her allowed number of attempts at a course. Thus, a WP, WF, or WN will count as an attempt at a course and a subsequent attempt will be counted as a repeat. If a student feels that there are extenuating circumstances that justify the withdrawal without it counting towards the allowed number of repeats, he or she must submit a written petition to the Associate Dean for Academic Affairs before the end of the semester in which the course was originally taken. Such exceptions will be granted only for circumstances beyond a student's control (medical, family emergency, change in work schedule) and only with appropriate documentation. Exceptions will not be granted for withdrawals in previous semesters.

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.

1. 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).
2. 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.
3. 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).
4. 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.
5. 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.
6. 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.

7. A course is an implied prerequisite to a course if it meets one of the following conditions:

- a. 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.

- b. 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.

8. **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.
9. 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:

$$gpa = \frac{\sum (credits \cdot earned) \times (grade \cdot earned)}{\sum credits \cdot earned}$$

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

There are four relevant grade point averages for students in the College of Engineering.

Engineering Bridge gpa: Applies only to students in the Engineering Bridge program. Calculated based on the defined set of Engineering Bridge courses.

Pre-Professional gpa: Calculated based on performance in the pre-professional courses only (both general and department-specific). Does not include performance in MAT 2150, BE 2100, or BE 2550 – even if these courses are taken before professional status is reached. Does not include Engineering Bridge courses or any other prerequisite courses.

College gpa: Calculated based on all engineering and technical courses, as well as required English courses. Does not include Engineering Bridge courses or any other prerequisite courses.

University gpa: Calculated based on all attempted credits (courses for which a letter grade was received). Does not include courses taken for S/U credit or for which an X, W, or I grade is received.

The table on the next page summarizes which courses are included in each of the grade point average calculations.

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.

Grade Point Average – Included Courses

Course	Bridge	Pre-Professional	College	University
BE 1050	X			X
BE 1060	X			X
BE 1200		X	X	X
BE 1300/1310		X	X	X
BE 2100			X	X
BE 2550			X	X
CHM 1040	X			X
CHM 1225/1230		X	X	X
CHM 1240/1250 ¹		X ¹	X ¹	X
CHM 2220 ¹		X ¹	X ¹	X
CHM 2280 ¹		X ¹	X ¹	X
ENG 1010	X			X
ENG 1020		X	X	X
ENG 3050			X	X
ENG 3060			X	X
MAT 0993	X			
MAT 1050	X			X
MAT 1800	X			X
MAT 2010		X	X	X
MAT 2020		X	X	X
MAT 2030		X	X	X
MAT 2150			X	X
PHY 1020	X			X
PHY 2170/2175		X	X	X
PHY 2171		X ²	X	X
PHY 2185			X	X
CHE 2800 ¹		X ¹	X	X
CE 2410 ²		X ²	X	X
ECE 2610 ³		X ³	X	X
ME 2200		X ⁴	X	X
ME 2410 ⁴		X ⁴	X	X
Other Engineering Courses			X	X
Gen Ed Courses Not Specified Above				X

The above table indicates (by X and shading) which courses are used in the calculation of each of the four grade point averages that pertain to Engineering students.

1 – Pre-professional and College for Chemical Engineering students only; 2 – Pre-professional for Civil Engineering students only; 3 - Pre-professional for Electrical Engineering students only; 4 - Pre-professional for Mechanical Engineering students only.

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 degree⁴. 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.

⁴ If a student earned credit for a sociohumanistic course (AI, FC, HS, VP, CD) at Wayne State prior to the Fall 2006 semester, any University-accepted grade (including D, D+) will be accepted. As of Fall 2006, all courses to be applied to the degree must be completed with a C- or higher at Wayne State (C or higher for transfer).

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:
- Students will be required to comply with academic policy and program requirements in place at the time they re-enter the College.
 - 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.
 - 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.
 - 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).
 - 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.)
- C. 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:
- Any University or College policy that is enacted to apply to all students, irrespective of admission date, will apply to returning students.
 - 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.
 - 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:

- 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 ≥ 2.5 , math/science gpa ≥ 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.

IMPORTANT INFORMATION

UNDERGRADUATE ENGINEERING ADVISING CONTACTS

Associate Dean for Academic Affairs

Michele J. Grimm, Ph.D.
1513 Engineering
313-577-3040
mgrimm@wayne.edu

Chemical Engineering and Undecided Students

Andrea Eisenberg
1106 Engineering
313-577-3716
aeisen@eng.wayne.edu

Electrical and Computer Engineering

Mary Jo Vagts
3116 Engineering
313-577-2771
mjv@wayne.edu

Mechanical Engineering

Keith Wadley
2165 Engineering
313-577-5939
keith.wadley@wayne.edu

Honors Program Advisor

Liza Lagman Sperl
2100 Undergraduate Library
313-577-3030
ab8898@wayne.edu

Pre-Law Advisor

Arnelle Douglas
University Advising Center
313-577-2680
arnelle.douglas@wayne.edu

Associate Dean for Student Affairs

Gerald Thompkins, Ph.D.
1170 Engineering
313-577-3780
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Civil and Environmental Engineering

Casey Rue
2165 Engineering
313-577-5939
crue@wayne.edu

Industrial and Manufacturing Engineering

Gail Evans
2045 Manufacturing Engineering Building
313-577-2660
gevans@eng.wayne.edu

Engineering Technology

Karen Travis
1159.1 Engineering Technology Bldg
313-577-0801

Pre-Medical Advisor

Kate Bernas
University Advising Center
313-577-3150
c.bernas@wayne.edu

International Student Advisor

Office of International Students and Scholars
416 Welcome Center
313-577-3422
www.oiss.wayne.edu

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

NOTE: Office Hours for the Advisors within the College of Engineering are posted outside of the Dean's Office hallway (1100 Engineering). Please visit your advisor during drop-in office hours or contact them in advance to set up an appointment.

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.

SAMPLE COURSE SYLLABUS

It is imperative that you closely read the syllabus for each of your courses. This document, whether provided in hard copy or on Blackboard, outlines the students' responsibilities for the course, the course schedule, and how to contact the faculty member when assistance is needed. If information is provided in the course syllabus, students are expected to be aware of it. Failure to read the syllabus or refer back to it will not be grounds for any waivers of policy. **(NOTE: This is an example only – some policies listed may now differ for the College.)**

Wayne State University BE 2100 – Basic Engineering III - Probability and Statistics in Engineering

Winter 2005 - WEBSITE at <http://blackboard.wayne.edu>

Instructor: R. Darin Ellis, Ph.D.
Office: 2145 Manufacturing Engineering building, 4815 Fourth St.
Phone/E-mail: (313) 577-3296,
E-mail: rdellis@wayne.edu
Office Hours: Wed 3:30PM - 5:00PM

Lecture: Wed 5:30PM -7:20PM, **Room:** 1005 Mfg Engineering Bldg
Quiz Section: Mon 5:30PM -7:20PM, **Room:** 1005 Mfg Engineering Bldg

Textbooks: 1) Statistics for Engineering and the Sciences, 4th edition, Prentice Hall, 1995 by: William Mendenhall and Terry Sincich
2) Student Solutions Manual - all odd numbered problems
3) Flaws and Fallacies in Statistical Thinking, Prentice Hall, 1974 by: **Stephen Campbell**. Not in Bookstore, Several Copies are on reserve in the Undergraduate Library as well as Sci/Eng library. **Call Number HA29.c253**

Teaching Assistants: **Maria Stoletova (aq6746@wayne.edu)**
Gangaraju Vanteddu (ak3180@wayne.edu)
Office: Manufacturing Engineering Building, 4815 Fourth St, Room #1073
Phone/E-mail: (313) 577-6825
Office Hours: tbd (probably right before or after quiz section)

Course Goals :

1. Identify and test a hypothesis
2. Identify sources of variability and calculate statistics to describe this variability
3. Use basic features of statistical software packages
4. Design a simple experiment to assess an engineering hypothesis
5. Select the appropriate statistical test for use in analysis of data
6. Develop numerical models (linear regression/curve fits) to describe data
7. Describe robustness of engineering designs and means by which to assess this statistically

In general, the course emphasizes breadth rather than depth.

Relationship to ABET program objectives: This course bears directly on the following College of Engineering program objective. (4) Have an understanding of the uncertainties involved in engineering systems and the role of the probabilistic and statistical techniques in dealing with uncertainty. This course may also support program-specific learning objectives.

Course Withdrawal:

Consistent with College of Engineering policy, withdrawal from this course **AFTER 2/11 is not permitted**. Poor performance is not considered grounds for granting an exception to the policy. Approval of the Associate Dean for Academic Affairs is required for exceptions to this policy.

**IMPORTANT - all course material is maintained at the course website at
<http://blackboard.wayne.edu>**

Course notes, old quizzes, old exams and student grades

Important Dates

Last day to add a class: 1/24

Last day to drop with full tuition refund: 1/24

Last day to drop without permission: 2/4 (no notation of course on transcript)

Last day to drop with instructor permission: 2/11 (course will have grade of W)

After 2/11 - no courses may be dropped without permission from the Associate Dean for Academic Affairs

Attendance:

Lecture attendance is an important mechanism for achieving course objectives. However, no records of attendance will be maintained and attendance will not be a consideration in computing the final grade in the course. Students are responsible for any announcements made in class or any other information that may be provided during lecture. "I wasn't in lecture that day" is not an excuse.

Homework-based Quizzes:

Odd Numbered Text problems will be assigned as Homework but will not be collected. The problems are worked out in the *Student Solutions Manual*. There will be a quiz in every session that is based on the homework. Each quiz is worth 4 points towards the final grade. The best 9 scores out of 10 will be counted toward the final grade. **We offer no makeup on quizzes for any reason – this policy is firm.**

Homework: Blackboard:

Students will be randomly selected during the quiz section and be asked to present the solution of a homework problem. They will NOT be allowed to use any notes other than standard formula sheets as they write the solution on the board. Each student will be called **twice** to go to the blackboard to present. If a student is absent when called upon or unable to present the solution, he/she will be skipped over and given a temporary grade of 0.

Examinations:

There will be a total of 3 exams including the Final. Each of the first two exams (Exam 1 & Exam 2) will contain **seventeen** questions. The final exam will have **twenty** questions. Make-up exams will be given in extreme circumstances and with prior arrangement with the instructor.

Exams are CUMULATIVE, the topics and skills developed in this course build sequentially. It is therefore not possible to perform well on an exam if the material covered in an earlier exam has not been mastered. New chapter material will be emphasized on each exam.

Exams and Quizzes are **Open Textbook**,
CLOSED NOTES and **CLOSED** Solutions Manual.

Flaws and Fallacies:

The topics covered in this pamphlet will be discussed at the beginning of every quiz section for 10 to 15 minutes. This will last approximately eight weeks. On the WEBSITE is the handout covering all of the topics. Several copies of the actual book are on reserve at the Undergraduate Library. The book is, however, overpriced and you are, therefore, not expected to purchase it. We will cover a chapter a week. Each chapter would take about 20 to minutes to read. Each student is required to submit a typed report in the eleventh week based on the application of concepts developed from the chapters in the *Flaws and Fallacies* book. Report requirements will be on the Website.

Grading Policy

<u>Item</u>	<u>Pts Possible</u>
Exam 1	17
Exam 2	17
Final Exam	20
Flaws & Fallacies	06
Quizzes	36
Homework	04
Total points	100

<u>Grades</u>	<u>Total Points</u>
A-, A	88 -- 100 *
B-, B, B+	77 -- 87
C-, C, C+	66 -- 76 **
D-, D, D+	55 -- 65
E	0 -- 54

Note: * In order to receive an "A-" grade or higher, *a student must also score at least 14 (70%)* on the final exam in addition to accumulating at least 88 points.

** **In order to receive a "C-" grade or higher, a student must also score at least 10 (50%)** on the final exam in addition to accumulating at least 65 points.

Ethics and Cheating:

1. Each student must bring a current picture ID in order to be allowed to take the exam. ANY student not having a picture ID will NOT be allowed to take the exam.
2. Dishonest conduct related to any examination or report will not be tolerated. Cheating includes but is not limited to GIVING or RECEIVING unauthorized help with regard to an examination. Cheating includes the use of unauthorized material during an examination or submitting material which is not the result of the student's own effort. Students who cheat will receive a **failing grade (F) for the Course and will be prosecuted to the fullest extent of College and University policy.**
3. No pagers, cellphones or other communications devices allowed during exams or quizzes.

Exam and Project Schedule:

- Exam 1 – Monday, February 7 Through Chapter 4
- Exam 2 – Monday, March 7 Through Chapter 7
- Flaws and Fallacies Report – Wednesday, April 13
- Final Exam – Wednesday, April 27 Cumulative

Homework Schedule:

Available on Blackboard

***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 timesavings, students pay undergraduate tuition for the first 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:

1. Request a complete degree audit from your academic advisor to ascertain what semester will be the last of the undergraduate program.
2. Develop a plan of work for the remaining undergraduate degree requirements.
3. If the final semester will include less than 16 credits of undergraduate coursework, you may be eligible for Senior Rule.
4. 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.
5. 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.
6. If admitted to the Graduate Program, you will be granted a Temporary Admit during your final undergraduate semester.
7. 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.

National Design Projects

The College has fielded teams for many different National Design Competitions over the years. These events are generally sponsored by one of the professional societies (Society of Automotive Engineers, American Society of Civil Engineers, etc.) or through a partnership between the federal government and industry. These projects are student-centered and take place over several months, with students working on design and manufacturing of a specified system before competing against other universities.

Students of all class-levels are encouraged to become involved with the National Design teams sponsored by the College. These projects provide a hands-on learning experience that can greatly supplement classroom learning. Students who are interested in participating should contact the student chapter of the professional society that sponsors the competition. National Design Projects can often require a significant time involvement from participating students. Students must determine what time commitment is appropriate based on their academic program requirements and other responsibilities. Class performance should always take a higher priority than student design project participation.

Students who are interested in participating in National Design competitions, but are concerned about time commitments, should schedule an appointment with the Associate Dean for Academic Affairs or the Associate Dean for Student Affairs to discuss what combination of courses and design activities will best meet the student's goals.