BACHELOR OF SCIENCE: ENGINEERING DIVISION

Undergraduate Program Goals

The overall goal of the undergraduate engineering degree programs at Wayne State University is to prepare students for success in their immediate and long-term professional careers as engineering practitioners as well as for pursuing graduate and professional studies and lifelong learning.

Undergraduate programs in the James and Patricia Anderson College of Engineering are divided into three phases. All students must complete the professional program in order to earn their Bachelor of Science degree. The majority of students begin their engineering curriculum through the pre-professional program, which allows them to complete a limited number of courses while demonstrating their academic preparedness for the professional program. Students who require additional background in math and science before entering the pre-professional program enter the College through the Eos Program and progress to the pre-professional program upon successful completion of a defined set of foundational courses.

Recommended High School Preparation

In order to place sufficient emphasis on the English, mathematics, physics, and chemistry required for normal progress in engineering, the recommended high school preparation for admission to the James and Patricia Anderson College of Engineering is:

Algebra	2 units
Chemistry	1 unit
English	4 units
Physics	1 unit
Plane and Solid Geometry	1.5 units
Social Science or Foreign Language	2 units
Trigonometry	0.5 unit
Electives	3 units

An incoming freshman with this background enters the pre-professional program if he or she earns satisfactory scores on the placement examinations in mathematics, chemistry and English (see below).

Students who are interested in pursuing a degree in engineering but who may not have the requisite background in science and mathematics, as demonstrated by their high school record, ACT or SAT scores, or placement exam results, will be admitted to the Eos Program (p.). This program is designed to provide students with the necessary background to proceed into and succeed in the pre-professional and professional programs in the engineering major of their choice.

Admission

Admission to the undergraduate programs in the James and Patricia Anderson College of Engineering is dependent upon high school grade point average (g.p.a.) and ACT or SAT scores for those students entering directly from high school, and upon grade point average and level of curriculum completion for transfer students from community colleges or other universities. The following admissions criteria cite minimum values used to place students in the professional, pre-professional, and Eos programs. Admission to all of these programs is contingent upon satisfaction of the general undergraduate admission requirements (https://bulletins.wayne.edu/undergraduate/general-information/admission/) of the University. (https://bulletins.wayne.edu/undergraduate/general-information/admission/)

Admission: Professional Engineering Program

Upon Successful completion of all departmental Pre-professional course requirements, students will be admitted into the Professional Level program of their Engineering Major.

Code	Title	Credits
BE 1200	Basic Engineering I: Design in Engineering	3
BE 1300	Basic Engineering II: Materials Science for Engineering Applications	3
BE 1310	Materials Science for Engineering: Laboratory	1
MAT 2010	Calculus I	4
MAT 2020	Calculus II	4
MAT 2030	Calculus III	4
CHM 1125 & CHM 1130	General Chemistry I for Engineers and General Chemistry I Laboratory	4
ENG 1020	Introductory College Writing	3
PHY 2170	University Physics I for Scientists and Engineers	4
PHY 2180	University Physics II for Scientists and Engineers	4

Students who do not meet the minimum requirements for admission to the professional program may be admitted to the pre-professional program as follows.

Admission: Pre-professional Engineering Program

Students entering the College directly from high school will be admitted to the pre-professional program if they have earned at least a 3.0 overall g.p.a. and placement into MAT 1800 or higher (score of 26 on the Math ACT or 620 on the Math SAT).

Students who have completed at least twelve credits of college-level coursework may be admitted to the pre-professional program if they have a minimum of a 3.0 overall g.p.a.. Students must also have placed into, or transferred the equivalent of, MAT 1800 and ENG 1020 (see below for descriptions of placement exam requirements). If fewer than twelve credits of college-level work have been completed, students must also submit their high school transcripts and ACT or SAT results.

Matriculation

Entering Freshmen

Students should plan on attending an Engineering Orientation session, scheduled in concordance with University Orientation, as early as possible to allow maximum flexibility in course scheduling. Students must take their placement exams and receive their results before attending an orientation session - allow at least seven days for the test results to post following the exam.

Transfer Students

For the student who has attended another institution and been admitted to the James and Patricia Anderson College of Engineering, the amount of advanced standing will be determined by the College and will depend upon the quantity and quality of the degree work completed prior to enrollment in this institution. Whether all, or only in part, such transferred credit may be applied toward a degree at Wayne State depending on the requirements of the curriculum chosen. No grade below a 'C' may be transferred into the College to satisfy a degree requirement. The student should consult the department academic advisor if he or she has any questions on their transfer status.

Course equivalency tables (http://www.transfercredit.wayne.edu) are designed to provide initial guidance. The decision of the Department

and the College regarding the acceptance of transfer credit to be applied to the undergraduate degree in engineering is final and supersedes the published transfer tables. Any request for reconsideration of the evaluation of transfer credits accepted by the James and Patricia Anderson 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, or within one year of the date of the evaluation if the latter is made subsequent to the student's enrollment in the College of Engineering.

Pre-professional Engineering Programs

Students in the pre-professional programs complete thirty-five to forty-five credits of their engineering curriculum, depending on their intended major. This program consists of the following courses that are required of all Division of Engineering students:

Code	Title	Credits
MAT 2010	Calculus I	4
MAT 2020	Calculus II	4
MAT 2030	Calculus III	4
BE 1200	Basic Engineering I: Design in Engineering	3
CHM 1125 & CHM 1130	General Chemistry I for Engineers and General Chemistry I Laboratory	4
CHM 1130	General Chemistry I Laboratory	1
BE 1500	Introduction to Programming and Computation for Engineers	3
or BE 1600	Introduction to Programming and Computation: Python	
ENG 1020	Introductory College Writing	3
PHY 2170	University Physics I for Scientists and Engineers	4
PHY 2180	University Physics II for Scientists and Engineers	4

[1] PHY 2170 & PHY 2171 for ECE majors

Most departments also require that students complete one or more 2000-level courses within their department (contact the academic advisor for more information).

In order to be admitted to the professional program of their choice, a student must complete the pre-professional courses with no grade lower than a 'C-minus' and a College grade point average for these courses of at least 2.5. Calculation of this pre-professional g.p.a. will include the grades earned in all courses listed above in addition to departmental pre-professional requirements. The required courses may have been completed at Wayne State or transferred from another institution. If a course was completed at Wayne State, the highest WSU grade will be included in this g.p.a. calculation. For courses taken only outside of WSU, the highest grade earned at another institution will be factored into the College's calculation of the pre-professional g.p.a. (transfer grades are not included in the calculation of the official University g.p.a.). Students in the pre-professional program may opt to complete MAT 2150 and BE 2100, or defer them until after acceptance into the professional program; however, they will not be included in the calculation of the pre-professional grade point average.

Students who do not satisfy these pre-professional requirements will become ineligible to enter the professional program and are prohibited from enrolling in professional level (3000- and 4000-level) engineering courses. Students enrolled in the pre-professional program who fail to meet the 2.5 g.p.a. requirement after completion of the pre-professional courses will be subject to exclusion from the James and Patricia Anderson College of Engineering.

Professional Engineering Programs

Students must qualify for the professional program in order to complete their advanced engineering courses and apply for their bachelor's degrees. Only students in the professional program in Engineering may register for 3000- and 4000-level engineering courses and, as an undergraduate, 5000-level technical electives. Exceptional students may be granted direct admission to the professional program – the majority of students will progress through the pre-professional program first.

Honors Options

Students who qualify, either as incoming freshmen or continuing students, may opt to pursue Engineering Honors and/or University Honors as they complete their Bachelor of Science degree. Students interested in pursuing University Honors will be enrolled in both the James and Patricia Anderson College of Engineering (primary College) and the Irvin D. Reid Honors College (secondary College). Students should work closely with both their Engineering and Honors advisor to select courses. In order to graduate with University Honors, students must maintain a cumulative g.p.a. of 3.3 or higher and must complete at least twenty-eight credits of honors designated courses (please refer to the University Honors College (https://bulletins.wayne.edu/undergraduate/honors-college/) requirements). To qualify for Engineering Honors in addition to University Honors, twenty-four credits of this coursework must include the following:

Code	Title	Credits
BE 2100	Basic Engineering III: Probability and Statistics in Engineering	3
BE 5998	Engineering Honors Thesis	4
HON 42XX	Honors Seminar that will satisfy General Education Requirements	3-4
Eight credits of honors designated courses within the major department. Students should consult their department advisor for more information.		8
Total Credits		**18-19**

The additional credits of honors courses can be taken in any department, either as honors designated or honors option sections. Students can obtain a list of courses that will also satisfy College requirements (such as MAT 2010 or ECO 2010) from their advisor. Students may elect to pursue only Engineering Honors through the listed twenty-four credits of requirements without completing the requirements for University Honors.

Cooperative Education Program

Students who wish to enrich their education with on-the-job engineering experience may enroll in the Cooperative Education Program. In this program, full-time study terms are alternated with full-time work assignments in cooperating industries. The program may be entered at the beginning of the junior year. Special cooperative programs are available on a limited basis and provide special arrangements in the definition of the work-study period. Most of the work assignments are in the Metropolitan Detroit area on a commuting basis; however, job opportunities are available in other cities and states. The Co-op program is available in all undergraduate engineering curricula.

Each Co-op student may enroll for one academic course while on work assignment. This must be done with the approval of the student's advisor and Co-op supervisor. Following each work assignment, the student may elect to enroll in BE 3510 or CHE 3510 for one credit. Election of the course requires the completion of a report on the work experience to the department advisor and to the Co-op Coordinator. This credit for work will not be counted toward graduation unless permission is specifically recommended by the department chairperson. Students

are automatically enrolled for a zero credit course (BE 3500) each term that they are on a Co-op assignment to insure that the experience appears on their transcript. A brief evaluation report covering each work assignment is to be submitted to the Co-op Coordinator, whether there has been enrollment in the above one credit courses or not. The student's performance on the job is rated by his/her industrial supervisor. Salaries and other benefits are paid for the time spent on each work assignment. For details and enrollment procedures, contact the Co-op Coordinator in the Career Planning and Placement Office.

Degree Requirements

The normal program of study for each of the degrees awarded in the James and Patricia Anderson College of Engineering requires from 120 to 136 credits. Of the total credits for the degree, at least thirty-four credits must be completed as resident credits in the degree program of the College. Departments may impose additional requirements.

Although the curriculum plans of the departmental sections which follow indicate a four-year program, many students will require additional time to complete all degree requirements. The national average time required for students to complete an engineering degree is approximately 4.5 years after beginning the calculus sequence (MAT 2010). Completion of the degree requirements in four years requires the election of an average of seventeen credits each term during the academic year. A student who participates in the Cooperative Education Program will require longer. Students may attend the University on either a full-time or part-time basis (twelve credits are considered by the University as a minimum full-time load).

Students who pursue degrees on a part-time basis may require much more than 4.5 years to complete all degree requirements. The actual amount of time required will depend upon the student's academic preparedness and the amount of time available for academic activities. The maximum load that a student carries should be consistent with the student's ability and available time. However, since a credit is defined as one class hour requiring about two hours of preparation per week carried through a semester, the fifteen to twenty-one credit programs shown in the curricular plans represent a full forty-hour academic work week. A three-hour laboratory period is generally regarded as the equivalent of one credit. Students who wish to graduate in four calendar years but who wish to schedule sixteen or fewer credits per semester may accomplish this by deferring certain courses until the spring or summer term. Students should check with their advisors regarding the courses that can best be taken in Spring/Summer term. Students who do not follow the sequence as outlined by their department must make sure that all course prerequisites are satisfied.

Specific requirements for these bachelors degrees may be found in the departmental sections for this College. These requirements are in effect as of the publication date of this bulletin; however, students should consult an academic advisor for verification of current requirements. The following discussion concerns generic aspects common to all Bachelor of Science engineering programs with the exception of Computer Science.

Basic Science Requirement

In order to meet accreditation requirements, all undergraduate engineering students are required to complete at least fifteen credits of basic science courses, including CHM 1125 and CHM 1130andPHY 2170andPHY 2180. These courses are required in all of the engineering curricula (with the exception of computer science), and it should be noted that certain curricula require the completion of prescribed science laboratories and/or additional chemistry and physics courses.

In addition, each student must elect a basic or advanced science course. Students should consult with their advisor for the current list of acceptable courses.

Mathematics Requirement

Engineering students use mathematics as a tool in all engineering and science courses in their college curricula, as well as later upon entry into the engineering profession. All prospective engineering students are encouraged to complete the number of units of mathematics stipulated in the section entitled Recommended High School Preparation, see High School Preparation, Recommended. Ideally, engineering students elect the first course in calculus (MAT 2010) in their first freshman term; however, many incoming students are not prepared to begin the mathematics program with calculus, and additional foundational coursework is necessary to strengthen the student's background. This foundational coursework is not included in the total credits required for an engineering degree. All students entering the Division of Engineering with no transfer credit in calculus must take the Mathematics Placement Examination (see above).

General Education Requirements

All students must satisfy the General Education Requirements (https://bulletins.wayne.edu/undergraduate/general-information/general-education/) of the University. In some cases, the College prescribes a more limited set of alternatives than permitted by the University in order to meet accreditation requirements while optimizing a path towards the degree. Students are cautioned to observe the following College requirements when selecting courses to satisfy General Education Requirements.

Communication Skills

In addition to the basic composition course ENG 1020 (BC), six credits in communication skills (ENG 3050 and ENG 3060) are required of all Engineering students, and these satisfy the Intermediate Composition (IC) and Oral Communication (OC) requirements of the University.

Inquiries

Engineering today extends far beyond technical decisions. Far-reaching effects of man-made technology require the engineer to be aware of and sensitive to his or her social responsibilities. Courses involving the engineer in sociological, economic, and aesthetic study are incorporated into the engineering program in order to insure an understanding beyond technical problems, which will enable the complete engineer to make value judgments concerning the impact of this technology upon society.

The College has, therefore, included a program in the social sciences and the humanities as a part of all engineering curricula. This program is integrated with the non-science portion of the University's General Education Program, which requires a student to elect one course from each of six categories. The Engineering Division imposes requirements in addition to the University-wide restrictions on some of the courses that satisfy General Education Requirements. These restrictions are described above and are shown in the degree requirements for each engineering program.

Technical Electives

Technical electives may be chosen from a selection of course offerings of the James and Patricia Anderson College of Engineering and the advanced science and mathematics courses of the College of Liberal Arts and Sciences. Other courses, such as advanced courses in the Mike Ilitch School of Business, may be elected with the prior approval of the undergraduate program director. The purpose of the technical elective is to increase the depth or breadth of one's professional knowledge. Courses should be selected so as to meet this objective.

Engineering courses elected as technical electives are normally selected at the 5000-level. These courses are open to both undergraduate and graduate students. Technical electives require the approval of a student's department and should be discussed with his or her academic advisor.

Placement and Qualifying Examinations

All entering freshmen must take the placement examinations in mathematics, chemistry and English. Transfer students who do not have transfer credit equivalent to MAT 2010, CHM 1125/CHM 1130, and ENG 1020 (with a grade of 'C' or higher) must take the appropriate placement examination. Consult the Office of Testing, Evaluation, and Student Life Research Services (http://www.testing.wayne.edu) for information regarding the schedule for the examinations.

Chemistry (Qualification Exam)

The sequence of chemistry courses for the engineering student normally begins with CHM 1125 and CHM 1130. Qualification for CHM 1125 and CHM 1130 requires a satisfactory score on the Chemistry Placement Examination. If a student is not properly prepared to consider placement in CHM 1125 and CHM 1130, direct entry into CHM 1040 is permissible.

English (Placement Exam)

All entering freshmen and transfer students shall determine their aptitude in English composition by completing the directed self-placement (https://testing.wayne.edu/students/tests/placement-competency/english) process unless they have earned credit equivalent to ENG 1020 through transferred courses, AP examinations, or the CLEP program.

Mathematics (Qualification Exam)

The sequence of mathematics courses for the engineering student normally begins with MAT 2010. For admission to MAT 2010, a qualifying examination must be passed. The placement examination must be taken by all students who have not transferred in the equivalent of MAT 2010, completed with at least a grade of 'C', or through AP credit. Students may apply to take the placement examination for either MAT 1800 or MAT 2010 depending upon their preparation in mathematics. The MAT 1800 Placement Examination is based upon one and one-half years of high school algebra and one year of high school geometry. The MAT 2010 Placement Examination is based upon a total of three and one-half to four years of college preparatory mathematics covering algebra, plane and solid geometry and trigonometry.

Failure to qualify for MAT 2010 may result in the student being placed in a lower level course such as MAT 1010, MAT 1070, or MAT 1800 depending upon the student's performance. Engineering students who do not take the Mathematics Placement Examination prior to registration for the first semester of the freshman year must enroll in MAT 1010 .

Emerging Scholars and Rising Scholars Programs

All engineering students who place into MAT 1070, MAT 1800 or MAT 2010 are encouraged to apply to the Emerging Scholars Program. Students who place into MAT 1010 are required to apply to the Rising Scholars Program. These are enhanced mathematics programs that provide additional experience in mathematical applications and problem solving, better preparing students for engineering problem solving. Contact the Department of Mathematics for more information: 1150 Faculty/Administration Building; 313-577-2479.

BE 1050 Career Readiness for Engineering Students Cr. 1
The design of the Career Readiness for Engineering Students series is set to help you identify and apply the steps necessary to reaching your goals related to your career and professional development. The materials & activities provided throughout the course will help you define your career goals, build your personal career materials, identify and apply the skills that are most sought after by employers to prepare you for success at your co-op and throughout your career. Offered Fall.

BE 1060 Building a Foundation for College Success Cr. 1
Satisfies General Education Requirement: Wayne Experience
This course is designed to expose students to the Wayne State University undergraduate experience. Students will gain an understanding of campus resources, institutional values, and the merits of a liberal arts education from an urban research one university. This course will aid in the development of critical and analytical thinking skills necessary for college success while determining one's academic and professional goals. Offered Fall, Winter.
Restriction(s): Enrollment limited to students with a class of Freshman.
Equivalent: FPC 1020, RSE 1010

BE 1101 Introduction to Officership Cr. 1
Classroom introduction to leadership, and the experiential examination of leadership, followership, decision-making, and group accomplishment of tasks. Offered Every Other Year.

BE 1102 Introduction to Leadership Cr. 1
Continuation of B E 1101; focus on communications, leadership, and problem-solving. The light infantry platoon and the troop leading process. Offered Every Other Year.
Prerequisite: BE 1101 with a minimum grade of C-

BE 1200 Basic Engineering I: Design in Engineering Cr. 3
Core principles of engineering practice: design, teamwork, professional ethics. Offered Fall, Winter.
Prerequisites: MAT 1050 with a minimum grade of C (may be taken concurrently), MAT 1070 with a minimum grade of C (may be taken concurrently), MAT 1800 with a minimum grade of C (may be taken concurrently), MAT 2010 with a minimum grade of C- (may be taken concurrently), MAT 2020 with a minimum grade of C- (may be taken concurrently), or MAT 2030 with a minimum grade of C- (may be taken concurrently)
Fees: $50

BE 1300 Basic Engineering II: Materials Science for Engineering Applications Cr. 3
Fundamentals of materials science; emphasis on how material properties and behavior affect engineering applications. Offered Every Term.
Prerequisites: (CHM 1125 with a minimum grade of C- or CHM 1100 with a minimum grade of C-), CHM 1130 with a minimum grade of C-, BE 1200 with a minimum grade of C- (may be taken concurrently), (PHY 2170 with a minimum grade of C- (may be taken concurrently) or PHY 2175 with a minimum grade of C- (may be taken concurrently)), and MAT 2020 with a minimum grade of C- (may be taken concurrently)
Corequisite: BE 1310

BE 1310 Materials Science for Engineering: Laboratory Cr. 1
Laboratory component of B E 1300. Offered Every Term.
Corequisite: BE 1300
Fees: $35

BE 1500 Introduction to Programming and Computation for Engineers Cr. 3
Use of computational tools, such as Excel and MATLAB, to solve engineering problems. Topics include general engineering problem solving, algorithm development, programming, and computational analysis. Offered Fall, Winter.
Prerequisites: MAT 2010 with a minimum grade of C-
Restriction(s): Enrollment is limited to Undergraduate level students.

BE 1600 Introduction to Programming and Computation: Python Cr. 3
An introduction to programming using Python for students with no programming experience. Basic control structures (sequence, selection, repetition) and all core data types using objects. Practice on core data structures (string, list, tuple, dictionary, and set). Design, implementation and testing of programs to solve problems with an emphasis on data manipulation using real world, practical examples. Offered Fall, Winter.

BE 2100 Basic Engineering III: Probability and Statistics in Engineering Cr. 3
An introduction to application of probability theory and statistical methods in engineering, including design and manufacturing. Offered Every Term.
Prerequisites: MAT 2020 with a minimum grade of C- (may be taken concurrently)

BE 2201 Innovative Tactical Leadership Cr. 1
Military organizational leadership with focus on leadership development and interpersonal group dynamics. Offered Every Other Year.
Prerequisite: BE 1102 with a minimum grade of C-

BE 2202 Leadership in Changing Environments Cr. 2
Challenges of leading in complex contemporary operational environments. Cross-cultural challenges of leadership applied to practical Army leadership tasks and situations. Offered Every Other Year.
Prerequisite: BE 1102 with a minimum grade of C-

BE 2600 Global Tech Internship Cr. 3
The Global Tech Experience is a virtual, equity-driven experiential learning program that enables undergraduate students from all backgrounds to build career-focused intercultural and technical skills. Offered Every Term.

BE 3000 Engineering Bridge Mentorship Program Leader Cr. 0
Documentation of mentor participation in Engineering Bridge Program. Offered Every Term.
Restriction(s): Enrollment limited to students in the following programs: BS in Chemical Engineering, BS in Civil Engineering, BS in Electrical Engineering, BS in Electrical and Comp Engg, BS in Industrial Engineering, BS in Mechanical Engineering; enrollment limited to students in the College of Engineering.

BE 3301 Leading Small Organizations I Cr. 2
Leadership development and interpersonal and group dynamics. Methods of visualizing, planning and leading organizations to achieve set goals. Offered Every Other Year.

BE 3302 Leading Small Organizations II Cr. 2
Offered Every Other Year.
Prerequisite: BE 3301 with a minimum grade of C-

BE 3500 Co-Op Record Cr. 0
Engineering practice under supervision in cooperative education program. Offered Every Term.
Restriction(s): Enrollment limited to students in the following programs: BS in Chemical Engineering, BS in Civil Engineering, BS in Computer Science, BS in Electrical Engineering, BS in Electrical and Comp Engg, BS in Industrial Engineering, BS in Information Technology, BS in Mechanical Engineering; enrollment limited to students in the College of Engineering.

BE 3510 Internship Experience Cr. 1-3
Engineering practice under supervision in cooperative/internship education program. Written report required. Offered Every Term.
Restriction(s): Enrollment limited to students in the following programs: BS in Chemical Engineering, BS in Civil Engineering, BS in Computer Science, BS in Electrical Engineering, BS in Electrical and Comp Engg, BS in Industrial Engineering, BS in Information Technology, BS in Mechanical Engineering; enrollment limited to students in the College of Engineering.
Repeatable for 6 Credits

BE 3900 National Design Competition Participant Cr. 0
For engineering undergraduates who are active team members in national engineering design competition projects. Satisfactory completion of this course will document active participation throughout the semester. Offered Every Term.

BE 4401 Leadership and Management Cr. 3
Multiple styles and theories of leadership; ethical decision making, especially as relating to changing organizational and individual behavior; accomplishing goals in resource-constrained environments. Offered Every Other Year.
Prerequisite: BE 3302 with a minimum grade of D-

BE 4402 Military Professionalism and Professional Ethics Cr. 3
Evaluation and assessment of needs of subordinate units and individuals; near-term and short-term plans to address these needs. Analysis of a historical battle as well as analysis of moral and leadership dilemmas in history. Offered Every Other Year.
Prerequisite: BE 4401 with a minimum grade of C-

BE 5900 National Design Competition Projects Cr. 1-4
Primarily for engineering undergraduates who are dedicating a substantial amount of effort towards college-sponsored national design competition projects. Offered Every Term.
Repeatable for 99 Credits

BE 5998 Engineering Honors Thesis Cr. 1-4
Completion of required Honors Thesis. Offered for undergraduate credit only. Offered Every Term.
Restriction(s): Enrollment limited to students in the following programs: BS in Biomedical Engineering, BS in Chemical Engineering, BS in Civil Engineering, BS in Electrical Engineering, BS in Electrical and Comp Engg, BS in Industrial Engineering, BS in Mechanical Engineering; enrollment is limited to Undergraduate level students; enrollment limited to students in the College of Engineering.
Repeatable for 4 Credits

EGR 3995 College-to-Career Seminar Cr. 1
This seminar course introduces engineering students to a diverse spectrum of engineering careers through interactive discussions with industry professionals, academic experts, and accomplished alumni. The course aims to enhance student engagement and foster a strong sense of belonging in their chosen engineering majors by providing in-depth insights into various career paths, current industry demands, and future trends. Through a combination of guest lectures, panel discussions, and networking opportunities, students will gain valuable perspectives on the practical applications of their studies, potential career trajectories, and the skills necessary for success in the rapidly evolving field of engineering. This course is designed to help students align their academic focus with their career aspirations and develop a broader understanding of the engineering profession's impact on society. Offered Fall, Winter.

EGR 5000 Innovation and Entrepreneurship Cr. 3
This project-based course guides students through the process of developing an innovation idea from concept through iterative refinement, leveraging interdisciplinary expertise and industry mentorship. Students engage in ongoing dialogue with faculty and professionals to deepen understanding, improve feasibility, and advance their projects. The course features a strong emphasis on real-world application, communication, and documentation through midterm and final written reports. Successful completion enables students to join the Anderson Venture Institute community, offering further opportunities for funding, mentorship, and collaboration to accelerate their innovation’s impact. Offered Yearly.

EGR 5655 Innovation & Entrepreneurship I Cr. 3
Provides education and hands-on experience in innovation and entrepreneurship applied to enterprise, product and service design and delivery. The first of a 2-semester sequence, this course teaches methods and tools to find, formulate, and develop engineering innovation and entrepreneurship, leading to practical, relevant, and productive new commercial and social enterprises. Offered Fall.
Restriction(s): Enrollment limited to students in the College of Engineering.

EGR 5656 Innovation & Entrepreneurship II Cr. 3
Provides education and hands-on experience in innovation and entrepreneurship applied to enterprise, product and service design and delivery. This course is the second of a 2-semester sequence. This course teaches methods and tools to find, formulate and develop engineering innovation and entrepreneurship, leading to practical, relevant, and productive new commercial and social enterprises. Offered Winter.
Restriction(s): Enrollment limited to students in the College of Engineering.

EGR 5657 Innovation & Entrepreneurship Lab Cr. 1
Provides hands-on application of Lean LaunchPad principles in innovation and entrepreneurship applied to enterprise, product and service and delivery. Offered Every Term.
Restriction(s): Enrollment limited to students in the College of Engineering.
Repeatable for 2 Credits

EGR 5658 Global Collaborative Projects Involving Sustainability, Innovation and Cultural Diversity Cr. 3
Participate in an authentic, global project experience that replicates how you will work in your career. This course, is designed for senior and graduate engineering students from diverse backgrounds. It aims to foster global collaboration, emphasizing sustainability, innovation, and building cross-cultural awareness and diversity. Students will engage in collaborative engineering projects, case studies, presentations, and discussions while gaining insights into different cultures, sustainable engineering practices, innovation, and global sustainability challenges. Offered Spring/Summer.

EGR 5990 Competition Team Cr. 2
This course is based on the students' contribution to a team participating in reputed regional/national/international competitions. Participation in the competition gives students a unique, multifaceted learning opportunity entirely led and run by students under the supervision of faculty member. Project teams collaboratively solve the complex engineering problems while gaining real-world experience. Participation in the competition provides students with hands-on laboratory learning experience and gives opportunities to hone leadership and professional skills. The faculty advisor is expected to provide technical and administrative support to the team and the overall program. Offered Every Term.
Repeatable for 4 Credits

EGR 5995 Special Topics in Engineering Cr. 1-4
State of the art research, development and practice topics from across the fields of engineering; emphasis on interdisciplinary topics. Offered Every Term.
Restriction(s): Enrollment limited to students in the College of Engineering.
Repeatable for 4 Credits