Engineering

Most of the courses with the designator of Engr are broad-based engineering courses applicable to all engineering disciplines. Several of these courses are part of the basic program which is required for engineering students. All courses are administered by the college and with the exception of ENGR 160 Engineering Problems with Computer Applications Laboratory, ENGR 340 Introduction to Wind Energy: System Design & Delivery, ENGR 466 Multidisciplinary Engineering Design and ENGR 467 Multidisciplinary Engineering Design II Multidisciplinary Engineering Design II are coordinated through Engineering Student Services in Engineering Academic and Student Affairs. Course-related questions should be directed to the department or unit with responsibility for that course. The following is a list of those responsibilities:

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<th>Course Code</th>
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<td>ENGR 160</td>
<td>Engineering Problems with Computer Applications Laboratory</td>
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<td>ENGR 340</td>
<td>Introduction to Wind Energy: System Design &amp; Delivery</td>
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<td>ENGR 466</td>
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<td>ENGR 467</td>
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Courses primarily for undergraduates:

Cr. R. F.S.
Introduction to the College of Engineering and the engineering profession. Information concerning university and college policies, procedures, and resources. Undeclared sections: Considerations in choosing an engineering curriculum. Opportunities to interact with departments. Declared sections: Introduction to major-specific topics. Offered on a satisfactory-fail basis only.

ENGR 104. LEAD Program Orientation.
(1-0) Cr. 1. F.
Orientation for LEAD Learning/Living Community participants. Introduction to college and university resources, tools and techniques to promote academic, professional and social/cultural development and success. Focus on building support networks with peers, faculty, and staff. Introduction to core engineering competencies including but not limited to initiative, communication, teamwork, and cultural adaptability. Offered on a satisfactory-fail basis only.

ENGR 105. LEAD Program Seminar.
(1-0) Cr. 1. S.
Seminar for LEAD Learning/Living Community participants. Focus on professional development and exposure to various engineering disciplines through hands-on lab experiences, industry visits and networking opportunities with alumni, faculty, and staff. Development of core competencies: engineering/technical knowledge, communication and teamwork. Offered on a satisfactory-fail basis only.

ENGR 131. Learning Community Seminar.
Cr. R. F.S.
Peer-mentored review of course topics in engineering undeclared learning communities. Offered on a satisfactory-fail basis only.

(1-0) Cr. 1. F.S. Prereq: ELP students only
Leadership development with focus on global context and awareness of events shaping the context. Exposure to theory of leadership with examples. Necessary characteristics of a leader, and strategies for leadership skills development. Exposure to non-traditional career paths for engineers. Outline of personalized leadership development. Offered on a satisfactory-fail basis only.

ENGR 160. Engineering Problems with Computer Applications Laboratory.
(2-2) Cr. 3. F.S.SS. Prereq: MATH 142 or satisfactory scores on mathematics placement examinations; credit or enrollment in MATH 165
Solving engineering problems and presenting solutions through technical reports. Significant figures. Use of SI units. Graphing and curve-fitting. Flowcharting. Introduction to mechanics, statistics and engineering economics. Use of spreadsheet programs to solve and present engineering problems. Solution of engineering problems using computer programming languages. (The honors section includes application of programming to mobile robotics).

ENGR 160H. Engineering Problems with Computer Applications Laboratory, Honors.
(2-2) Cr. 3. F.S.SS. Prereq: Satisfactory scores on mathematics placement examinations; credit or enrollment in MATH 142, MATH 165
Solving engineering problems and presenting solutions through technical reports. Significant figures. Use of SI units. Graphing and curve-fitting. Flowcharting. Introduction to mechanics, statistics and engineering economics. Use of spreadsheet programs to solve and present engineering problems. Solution of engineering problems using computer programming languages. (The honors section includes application of programming to mobile robotics).

(3-0) Cr. 3. F.S.
Removing mysteries surrounding science and technology. Identify key concepts from applied science and technology to obtain better understanding on how things work. Review and explain the principles behind the technologies which define our modern way of life. A survey of broad range of technology could include: cell phones, GPS, radio, television, computers, ultrasound, microwave ovens, automobile, bioengineering and other industrial and consumer technologies. Common day technology examples illustrating scientific knowledge and applications.

Cr. 3. F.S. Prereq: Satisfactory completion of international work experience of at least ten weeks or nine credits of approved course work taken abroad. Permission of student’s department prior to departure.
Critique of work/study abroad experience as it relates to professional development. Taken the semester after completion of work abroad or study abroad. Written report and presentation. Offered on a satisfactory-fail basis only. Meets International Perspectives Requirement.

ENGR 327. Voices of Public Policy.
(3-0) Cr. 3. F.S. Prereq: Sophomore classification in engineering
Role and impact of legislative process, partisan politics, government, lobbyists, the media, expert testimony and grassroots activism on public policy. Critical analysis of context; of claims, assumptions, premises, and evidence of both sides; represented and disenfranchised populations; the ethical issues to develop personal position and courses of action to impact public policy process.

(3-0) Cr. 3. F. Prereq: MATH 166, PHYS 222

ENGR 350. Dean’s Leadership Seminar.
(1-0) Cr. 1. F.S. Prereq: Selection based on demonstrated commitment to leadership development. Sophomore or higher.
Understanding the complexities of leadership in building an organization, decision-making styles, communication, managing change, building trust, shared responsibility leadership, creating legacy, prioritizing, effective use of authority, conflict, ethics, integrity, transparency, accountability. Offered on a satisfactory-fail basis only. May not apply toward a degree in Engineering.

ENGR 396. Summer Internship.
Cr. R. Repeatable. SS. Prereq: Permission of adviser and Engineering Career Services
Professional or interdisciplinary work period in engineering or career-related field of a minimum of 10 weeks during the summer. Offered on a satisfactory-fail basis only.
ENGR 397. Professional Internship. 
Cr. R. F.S.SS. Prereq: Permission of adviser and Engineering Career Services
Professional or interdisciplinary work period in engineering or career-related
field. Enrollment limited to one semester and/or one summer per academic year.
Offered on a satisfactory-fail basis only.

ENGR 466. Multidisciplinary Engineering Design. 
(Cross-listed with A E, AER E, CPR E, E E, I E, M E, MAT E). (1-4) Cr. 3.
Repeatable. F.S. Prereq: Student must be within two semesters of graduation;
permission of instructor.
Application of team design concepts to projects of a multidisciplinary nature.
Concurrent treatment of design, manufacturing, and life cycle considerations.
Application of design tools such as CAD, CAM, and FEM. Design methodologies,
project scheduling, cost estimating, quality control, manufacturing processes.
Development of a prototype and appropriate documentation in the form of written
reports, oral presentations and computer models and engineering drawings.

ENGR 467. Multidisciplinary Engineering Design II. 
(Cross-listed with AER E, CPR E, E E, I E, MAT E, M E). (1-4) Cr. 3. Repeatable,
maximum of 2 times. F.S. Prereq: Student must be within two semesters of
graduation or receive permission of instructor.
Build and test of a conceptual design. Detail design, manufacturability, test
criteria and procedures. Application of design tools such as CAD and CAM and
manufacturing techniques such as rapid prototyping. Development and testing
of a full-scale prototype with appropriate documentation in the form of design
journals, written reports, oral presentations and computer models and engineering
drawings.

ENGR 490E. Entrepreneurship.
Cr. 1-3. Repeatable, maximum of 3 credits. Prereq: Junior or senior classification
in engineering, college approval

ENGR 490L. Independent Study.
Cr. 1-3. Repeatable, maximum of 3 credits. F.S.SS.
Leadership.