Engineering (ENGR)

Courses

**ENGR 005 Introduction to Engineering Practice 2 Credits**
First year practical engineering experience; introduction to concepts, methods and principles of engineering practice. Problem solving, design, project planning, communication, teamwork, ethics and professionalism; innovative solution development and implementation. Introduction to various engineering disciplines and degree programs. Mandatory for and open only for first year RCEAS students.

**ENGR 010 Applied Engineering Computer Methods 2 Credits**
Introduction to programming for engineering tasks. Use of Matlab to program and solve engineering problems. Interfacing sensors and actuators to a microcontroller board and programming to interact with the world. Computer lab setting. Final project controls engineering equipment.

**Attribute/Distribution:** ND

**ENGR 050 Directed Study 1-3 Credits**
Engineering project work either as an individual or team member. Projects directed by faculty within the Rossin College of Engineering and Applied Science with possible interaction from outside consultants, community and industry leaders. Written report required. RCEAS permission required.

**Repeat Status:** Course may be repeated.

**ENGR 130 Engineering Communications 1 Credit**
Experience and theory in oral and written communications preparing students for their first Co-Op work assignments. Required of all Engineering Co-Op students.

**Prerequisites:** ENGR 200 or ENGR 198

**Can be taken Concurrently:** ENGR 200, ENGR 198

**ENGR 160 Engineering Internship 1-3 Credits**
Offers students who have attained at least Jr2 standing an opportunity to complement coursework with a work experience. Detailed rules can be obtained from the Associate Dean of Engineering. Report required. P/F grading.

**ENGR 200 Engineering Co-op 3 Credits**
Supervised cooperative work assignment to obtain practical experience. Must have acceptance into the program. P/F grading.

**Repeat Status:** Course may be repeated.

**ENGR 212 (BUS 212, DES 212, MAT 212, ME 212) Integrated Product Development-2 (IPD-2) 2 Credits**
Business engineering, and design arts students work in cross disciplinary teams of 4-6 students on the detailed design, including fabrication and testing, of a prototype following industry and engineering standards for the new product designed in the IPD course 1. Additional deliverables include a detailed production plan, marketing plan, base-case financial models, project portfolio. Teams work on projects from industry and entrepreneurial start-ups. Oral presentations and written reports.

**Prerequisites:** ENGR 211

**ENGR 300 Apprentice Teaching 1-3 Credits**

**ENGR 400 Engineering Co-op for Graduate Students 1-3 Credits**
Supervised cooperative work assignment to obtain practical experience in field of study. Requires consent of department chairperson. When on a cooperative assignment, the student must register for this course to maintain continuing student status. Limit to at most three credits per registration period. No more than six credits may be applied towards a master’s program and no more than nine credits may be used throughout a student’s entire graduate study at Lehigh.

**Repeat Status:** Course may be repeated.

**ENGR 401 Teaching/Presentation Skills 1 Credit**
Development of teaching and presentation skills for scientific professionals. Presentation effectiveness, teaching/presentation methodologies, classroom management, course development/ content preparation, lecture/presentation development and lecture/ presentation delivery. Individualized undergraduate course specific modules selected by student. Enrollment limited to Rossin Doctoral Fellows.

**ENGR 402 Preparing for the Professoriate 1 Credit**
Overview of the job search, research program development and service skills for graduate students entering academic careers. Transition from graduate student to faculty responsibilities, the post-doctoral experience, time management, CV/resume preparation, faculty search process, tenure and promotion, research leadership and program development, research proposal preparation and research sponsorship. Enrollment limited to Rossin Doctoral Fellows.

**ENGR 452 (CHE 452) Mathematical Methods in Engineering 3 Credits**
Analytical techniques are developed for the solution of engineering problems described by algebraic systems, and by ordinary and partial differential equations. Topics covered include: linear vector spaces; eigenvalues, eigen-vectors, and eigenfunctions. First and higher-order linear differential equations with initial and boundary conditions; Sturm-Louiville problems; Green’s functions. Special functions; Bessel, etc. Qualitative and quantitative methods for nonlinear ordinary differential equations; phase plane. Solutions of classical partial differential equations from the physical sciences; transform techniques; method of characteristics.

**ENGR 490 Thesis (Moc) 1 Credit**

**ENGR 499 Dissertation (Moc) 1 Credit**