The School of Science and Engineering

Engineering Science

Office: School of Science and Engineering
200 Lindy Boggs Center
Phone: (504) 865-5764
Fax: (504) 862-8747
Website: www.eng.tulane.edu/Undergrad/IDM/IDM_new.htm

MINOR IN ENGINEERING SCIENCE

Students not majoring in biomedical or chemical engineering may earn a minor in Engineering Science by completing the following courses.

I. Prerequisite Math and Science Courses:

MATH 121 Calculus I (4)

MATH 122 Calculus II (4)

MATH 221 Calculus III (4)

MATH 224 Introduction to Applied Mathematics (4)

or MATH 424 Ordinary Differential Equations (4)

and either CHEM 107/117; CHEM 108/118 General Chemistry (4, 4)

or

PHYS 131; PHYS 132 (4, 4) General Physics I and II (4, 4)

Total 24

II. Engineering Courses:

Required of all Engineering Science minors:

* ENGR 100 Seminar (1)
* Two 300-400 level electives in either biomedical or chemical engineering (3,3)

Total 6

Plus one course chosen from the following list:

*CPSC 101 Software Design and Programming (4)

*CENG 221 Chemical Engineering Design I (3)

Total 3-4

And three courses chosen from the following list:(appropriate for students who have taken Physics)

*ENGR 201 Electric Circuits I (3)

*ENGR 241 Statics (3)

*ENGR 243 Mechanics of Materials (3)

*ENGR 344 Fluid Mechanics (3)

(appropriate for students who have taken Chemistry)

*ENGR 201 Electric Circuits I (3)

*CENG 212 Thermodynamics (3)

*ENGR 312 Materials Science and Engineering (3)

Total 9

COURSE DESCRIPTIONS

ENGR 101, ENGR 102 Introduction to Engineering (1) Seminar 1.

The objectives of ENGR 100 seminar are to familiarize each student with the profession and various fields of engineering, to assure that each student is confident in their choice of major, to inform each student of what will be expected of them before and after graduation, and to begin to build the skills necessary for success. The ENGR 101 seminars are designed to bring these objectives into sharp focus for each specific major program.

ENGR 201 Electric Circuits 1 (3) Lecture 3.

Prerequisites: MATH 122, PHYS 132 A fundamental course dealing with electric charge, current, voltage, power, energy, and passive and active circuit elements. Response of linear circuits to steady state and time dependent signals, differential equations, circuit laws, network analysis, frequency response, phasors, and transfer functions.

ENGR 241 Statics (3) Lecture 3.

Prerequisites: PHYS 131. Statics of particles and rigid bodies. Concepts of force, moments, free body diagrams, equilibrium and friction with engineering applications.

ENGR 243 Mechanics of Materials (3) Lecture 3.

Prerequisites:ENGR 241, MATH 122. Concepts of stress and strain. Generalized Hooke's Law. Mohr's circle. Formulations for axial, shear, bending, torsion, and combined stresses applied to tension members, pinned points, symmetric and unsymmetric beams, and shafts. Euler buckling criteria for columns.

ENGR 312 Materials Science and Engineering (3) Lecture 3.

Prerequisites: CHEM 107, CHEM 108, PHYS 131, PHYS 132, MATH 221. The structure and properties of engineering materials are considered. Coverage includes basic atomic and microscopic structure, testing methods, phase relationships, and strengthening techniques. Emphasis is placed on common industrial materials. Thermodynamics and kinetics aspects of material science are discussed.

ENGR 344 Fluid Mechanics (3) Lecture 3.

Prerequisites: ENGR 241, MATH 224. Fundamental concepts and properties of fluids. Basic equations of fluid statics and dynamics in differential and integral form using both system and control volume viewpoints. Topics and applications include dimensional analysis and similitude; ideal, viscous and compressible flows; pipe and boundary layer flow.