

ENGINEERING SCIENCE (ESC)

Course Descriptions

ESC 100. Engineering Computer Applications and Design. 3 Credit Hours.

Engineering Computer Applications and Design provides the student with basic skills in the use of Computer Aided Drafting (CAD), word-processing, spreadsheets, and computer math software. This course focuses on solving engineering problems through teamwork approaches. Students will learn to conceptualize problems, develop solutions, and present reports.

Prerequisites: MTH 140 (or MTH 140S) or higher with a minimum grade of "C" and Reading Proficiency

ESC 101. Scientific Computer Programming. 3 Credit Hours.

Scientific Computer Programming emphasizes instruction in computer programming language to solve engineering problems. Instruction will include such topics as the study of digital computer systems, programming techniques, program structure, coding, execution, debugging, and verification of programs. Computer programming exercises will be conducted to analyze, interpret, and synthesize engineering data. (Credit is only allowed for either ESC 101 or GE 176.)

Prerequisites: MTH 160 (or MTH 160S) or higher with a minimum grade of "C" and Reading Proficiency

ESC 200. Engineering Circuits I. 4 Credit Hours.

Engineering Circuits I is a problem-solving course that develops analytical skills important for all engineering disciplines as well as fundamental circuit theory for electrical engineers. The course covers circuit elements and the fundamental laws governing their behavior, network theorems, and analysis techniques, including transient responses. Circuit simulation using computer models and practical circuit testing are included in the laboratory work. (Credit is only allowed for either ESC 200 or EE 275.)

Prerequisites: PHY 122 with a minimum grade of "C", concurrent or prior enrollment in MTH 230 with a minimum grade of "C", and Reading Proficiency

ESC 203. Engineering Statics. 3 Credit Hours.

Engineering Statics is the application of the principles of statics to the solution of engineering problems involving particles and systems in equilibrium. Topics include force systems in equilibrium, centers of gravity, friction, and moments of inertia. Vector analysis techniques will be used where appropriate. (Credit is only allowed for either ESC 203 or ME 275.)

Prerequisites: PHY 122 with a minimum grade of "C" and Reading Proficiency

ESC 204. Engineering Dynamics. 3 Credit Hours.

Engineering Dynamics is the application of the principles of dynamics to the solution of engineering problems involving particle and rigid body motion. Topics include linear motion, curvilinear relative motion, energy, impulse, and momentum. Vector methods are used where appropriate. (Credit is only allowed for either ESC 204 or ME 277.)

Prerequisites: ESC 203 with a minimum grade of "C" and Reading Proficiency

ESC 205. Mechanics of Materials. 3 Credit Hours.

Mechanics of Materials is the application of principles of mechanics to engineering problems of strength and stiffness. Topics include stress, strain, thin cylinders, beams, torsion, columns, and combined stresses at a point. (Credit is only allowed for either ESC 205 or ME 278.)

Prerequisites: ESC 203 with a minimum grade of "C" and Reading Proficiency

ESC 206. Strength of Materials Lab. 1 Credit Hour.

Strength of Materials Lab is the laboratory component of the Mechanics of Materials course (ESC 205). Students will perform tension, compression, shear, torsion, bending, and hardness tests on various materials in a materials testing laboratory. Students are introduced to formal lab report writing including data presentation, analysis, and drawing conclusions. (Credit is only allowed for either ESC 206 or ME 279.)

Prerequisites: ESC 205 with a minimum grade of "C" and Reading Proficiency

ESC 207. Engineering Thermodynamics. 3 Credit Hours.

Engineering Thermodynamics is the study of energy transformations and the relation of energy to the states of matter. The primary focus is on the fundamental laws of thermodynamics and the concepts of analysis of energy conversion and how they are applied in engineering situations. (Credit is only allowed for either ESC 207 or ME 280.)

Prerequisites: MTH 230 and PHY 223 with minimum grades of "C", and Reading Proficiency