ENGINEERING SCIENCE (ESC)

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 higher with a grade of 'C' or better 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. Prerequisites: MTH 160 or higher with a grade of 'C' or better 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. Prerequisites: PHY 122 with a grade of 'C' or better, prior or concurrent enrollment in MTH 230, 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. Prerequisites: PHY 122 with a grade of 'C' or better 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. Prerequisites: ESC 203 with a grade of 'C' or better and Reading Proficiency.

ESC 205. Mechanics of Materials. 3 Credit Hours.
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. Prerequisites: ESC 203 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. Prerequisites: ESC 205 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. Prerequisites: MTH 230, PHY 223, and Reading Proficiency.