Engineering (ENG GEN)

101 Introduction to Science, Engineering and Technology (2) UC:CSU
Lecture 2 hours.

This course provides an introduction to the engineering profession and its different fields, and an understanding of engineering processes and tools including experimentation, data analysis, and computer and communication skills. Emphasis is given to technical communications, ethical considerations, and engineering design and analysis skills. Students are introduced to computer systems used in engineering practice such as spreadsheets, computer-aided design, and computational software.

C-ID: ENGR 110

131 Statics (3) UC:CSU
Lecture 3 hours.

Prerequisite: Physics 101 with a grade of "C" or better.

Corequisite: Concurrent enrollment in Mathematics 262.

This is a first course in engineering mechanics. Students will learn about two and three dimensional analysis of force systems on particles and rigid bodies in equilibrium. Topics also include static analysis of trusses and beams, and determination of center of gravity, centroids, friction, and moments of inertia of area and mass.

C-ID: ENGR 130

220 Electrical Circuits I (4) CSU
Lecture 3 hours. Laboratory 3 hours.

Prerequisite: Physics 102 with a grade of "C" or better.

Corequisite: Concurrent enrollment in Mathematics 275.

Students learn the theory of circuit analysis and practice its application to areas of importance in electrical analysis in time and frequency domains, transient, and steady state solutions. Topics include linear circuit analysis techniques, Kirchhoff’s Laws, Network Theorems, mesh and nodal analysis, OP amps and amplifiers, Thevenin/Norton equivalents circuits, natural forced-complete response of RLC circuits and Laplace Transforms. Introduction to AC circuits, phasors, three phase power, and frequency response and resonance. The laboratory includes experimental verification of the laws of AC and DC circuits, Kirchhoff’s laws, and Thevenin’s theorem using instruments such as multimeter, oscilloscopes, and signal generators.

185 Directed Study - Engineering, General (1) CSU
Conference 1 hour per unit.

This course allows students to pursue directed study in General Engineering on a contract basis under the direction of a supervising instructor.

Engineering Graphics and Design Technology (EGD TEK)

101 Engineering Graphics (3) UC:CSU
Lecture 2 hours. Laboratory 2 hours.

Formerly Industrial Technology 110. Credit not given for both courses.

In this introductory course students will learn the fundamentals of technical drawing and an introduction to computer-aided design (CAD) with a focus on mechanical applications. Topics include the development of visualization and technical sketching skills in conjunction with orthographic projections; dimensioning and tolerancing practices, including a brief introduction to geometric dimensioning and tolerancing (GD&T); and reverse engineering. Lab work includes hand sketching and the use of two- and three-dimensional CAD software.

C-ID: ENGR 101

111 2-D Computer-Aided Drafting (3) *UC:CSU
Lecture 2 hours. Laboratory 2 hours.

Students will utilize AutoCAD software to learn the basic concepts involved in creating two-dimensional CAD drawings. This course is appropriate for students studying engineering, architecture, landscape, and construction as well as other fields that require CAD skills. Upon successful completion of this course students will be able to accurately produce 2-D drawing documents that follow CAD and appropriate industry standards.

*UC Credit Limit: Engineering Graphics & Design 111 and 310 combined: maximum credit, one course.

131 CAD-Advanced Applications 3-D (2) UC:CSU
Lecture 2 hours. Laboratory 2 hours.

Prerequisite: Engineering Graphics & Design 111 with a grade of "C" or better.

Corequisite: Concurrent enrollment in Engineering Graphics & Design 111 or 210 or 310.

This laboratory class is designed for students who need additional experience using 2-D and/or 3-D CAD software. Students will explore advanced computer-aided design and drafting techniques in various applications related to mechanical design and manufacturing. Students must have some prior experience with CAD software and an understanding of engineering drawings, and may be taking a CAD course concurrently. Specific course content will vary by student.

210 3D Computer-Aided Design (3) UC:CSU
Lecture 1 hour. Laboratory 5 hours.

Prerequisite: Engineering Graphics & Design 101 with a grade of "C" or better.

In this course students learn the fundamentals of 3D solid modeling with mechanical applications. The topics include sketching, part modeling, assembly modeling, and engineering drawing creation using 3D parametric modeling software. The course assumes the student has prior knowledge of mechanical drawing, and the use of 3D CAD software and design project. This course covers the student’s prior knowledge and experience in mechanical drafting and 3D CAD software such as SolidWorks.

*UC Credit Limit: Engineering Graphics & Design 111 and 310 combined: maximum credit, one course.