

# ENGINEERING (ENGR)

## ENGR 102 C Engineering Design Graphics 3 Units

Term hours: 36 lecture and 72 laboratory. This is an introductory course which utilizes drafting and the CAD system for engineering applications, graphics concepts and visualization. Graphic expressions using CAD software, with emphasis on 2D drawings that includes architectural and industrial practice involving orthogonal projection of parts, assembly drawings, standards, tolerances, and surface finishes. Also, focus other attributes of drawings, production drawings, and projects involving complete design of systems and subsystems. (CSU/UC, C-ID: ENGR 150=ENGR 102 C + ENGR 205 C)

## ENGR 110 C Introduction to Engineering 3 Units

**Prerequisite(s):** Intermediate Algebra or MATH 115C with a grade of C or better.

Term Hours: 54 lecture. This course is an introduction to engineering as a profession and its associated career responsibilities and opportunities. It also presents an overview of functions of an engineer and different related industries, different engineering discipline; illustrates opportunities and challenges in the engineering profession and provides tools for becoming a successful student. Students learn about current trends and issues in engineering career and academic options. This course also explains the engineering education pathways and explores effective strategies for students to reach their full academic potential. Presents an introduction to the methods and tools of engineering problem solving and design including the interface of the engineer with society and engineering ethics. Develops communication skills pertinent to the engineering profession. Representatives from industry and academic institutions present overviews of the engineering field and describe potential job opportunities. Field trips to various companies and engineering facilities provide an insight into different aspects of engineering. This course includes the application of engineering and scientific problem solving methods to introductory mechanics and electricity. It also meets requirements for credit in Engineering. Duplicate credit not granted for ENGT 110 C. Pass/No Pass/Letter Grade Option. (UC/CSU, C-ID:ENGR 110)

## ENGR 201 C Statics 3 Units

**Prerequisite(s):** ENGR 110 C, PHYS 221 C, and MATH 150BC with a grade of C or better.

Term hours: 54 lecture. This course includes the study of properties of forces, moments, couples and resultants; two- and three-dimensional force systems acting on engineering structures in equilibrium; analysis of trusses, and beams; distributed forces, shear and bending moment diagrams, center of gravity, centroids, friction, and area and mass moments of inertia. Optional additional topics include fluid statics, cables, Mohr's circle and virtual work. (UC/CSU, C-ID:ENGR 130).

## ENGR 205 C Adv 3D Solid Mod and Simulati 3 Units

**Prerequisite(s):** ENGR 102 C and MATH 142 C, with a grade of C or better.

Term Hours: 36 lecture and 72 laboratory. This advanced course starts with sketches and proceeds to solid modeling, simulation, animation and motion analysis, creation of bill of material, conversion to stereolithography files and G-codes for rapid prototyping purposes, with emphasis on industrial practice involving component and assembly modeling for actual products. Standards, Tolerances, surface finishes and other attributes of drawings to be addressed with projects involving systems and subsystems.(CSU/UC, C-ID: ENGR 150=ENGR 102 C + ENGR 205 C)

## ENGR 210 C Electric Circuits Analysis 5 Units

**Prerequisite(s):** PHYS 222 C and ENGR 110 C, with a grade of C or better.

**Corequisite(s):** MATH 250BC.

Term hours: 72 lecture and 54 laboratory. This course consists of an introduction to analysis of circuits under steady state and transient conditions. Analysis techniques include nodal analysis, loop analysis, superposition method, Thevenin's Theorem, Norton's Theorem and source transformation. RLC circuits are analyzed under DC, AC – steady state and transient conditions using multiple methods including bode diagrams, Fourier and Laplace transforms. Also consists of an analysis of circuits under steady state and transient conditions; network theorems, RLC circuits analyzed under DC, AC-steady state and transient conditions using multiple methods.(CSU/UC, C-ID: ENGR 260, ENGR 260L)

## ENGR 220 C Program Prob Solv in MATLA 3 Units

**Prerequisite(s):** MATH 150AC with a grade of C or better.

Term hours: 36 lecture and 72 laboratory. This course utilizes the MATLAB environment to provide students with a working knowledge of computer-based problem-solving methods relevant to science and engineering. It introduces the fundamentals of procedural and object-oriented programming, numerical analysis, and data structures. Examples and assignments in the course are drawn from practical applications in engineering, physics, and mathematics. (UC/CSU, C-ID:ENGR 220)

## ENGR 299 C Engineering Independent Study 0.5-2 Units

**Prerequisite(s):** Approved Independent Study Contract

Term hours: 0-36 lecture and/or 0-108 laboratory depending on units attempted. This course is for students who wish to increase their knowledge of engineering design and testing process through individual study, research or internships may enroll in this class. Permission of the instructor is required along with a contract outlining a student's independent work and the supervision of the instructor. Pass/No Pass/Letter Grade Option. (UC/CSU Credit Limitation)