ENGINEERING (ENGR)

ENGR 003   Introduction to Engineering   3 Units
Students will be introduced to the engineering profession and to the devices, processes, and techniques utilized in solving engineering problems. Students will learn modern engineering tools in hands-on and computer-based labs. They will further develop engineering leadership and team self-management skills. As an orientation to the engineering field, students will learn what engineers do and what guides their thinking, both analytically and ethically. Students will learn and employ research-driven, affective strategies for academic success. As they explore career and academic pathways, students will develop their long-term engineering goals and will leave with a detailed plan for success in the inspiring world of engineering. (C-ID ENGR 110)

Lecture Hours: 2 Lab Hours: 3 Repeatable: No Grading: L
Advisory Level: Read: 3 Write: 3 Math: 4
Transfer Status: CSU/UC   Degree Applicable: AA/AS
CSU GE: None   IGETC: None   District GE: None

ENGR 006   Engineering Graphics   3 Units
Students will learn how to communicate engineering designs through engineering drawings. Students will be introduced to 2-D and 3-D computer-aided design (CAD) software. Topics include sketching, orthographic projections, visualization skills, mechanical dimensioning and tolerancing practices, and the engineering design process. (C-ID ENGR 150)

Lecture Hours: 2 Lab Hours: 3 Repeatable: No Grading: L
Prerequisite: MATH 022 or MATH 025 with a C or better
Advisory Level: Read: 3 Write: 3
Transfer Status: CSU/UC   Degree Applicable: AA/AS
CSU GE: None   IGETC: None   District GE: None

ENGR 008   Programming and Problem-Solving in MATLAB   3 Units
Students will learn computer-based problem-solving methods relevant to science and engineering utilizing the MATLAB environment. This course draws from practical applications in engineering, physics, and mathematics. Topics include procedural and object-oriented programming, numerical analysis, and data structures. (C-ID ENGR 220)

Lecture Hours: 2 Lab Hours: 3 Repeatable: No Grading: L
Prerequisite: MATH 071 or MATH 071H with C or better
Advisory Level: Read: 3 Write: 3
Transfer Status: CSU/UC   Degree Applicable: AA/AS
CSU GE: None   IGETC: None   District GE: None

ENGR 032   Statics   3 Units
Students will analyze engineering structures in equilibrium. This is the first course in engineering mechanics and covers principles of statics as applied to particles and rigid bodies in two and three dimensions under concentrated and distributed force systems. Topics include properties of forces, moments, couples and resultants; two- and three-dimensional force systems, analysis of trusses, and beams; distributed forces, shear and bending moment diagrams, center of gravity, centroids, friction, and area and mass moments of inertia. (C-ID ENGR 130)

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
Prerequisite: PHYS 004A and MATH 072; both with C or better
Advisory Level: Read: 3 Write: 3
Transfer Status: CSU/UC   Degree Applicable: AA/AS
CSU GE: None   IGETC: None   District GE: None

ENGR 033   Circuit Analysis   4 Units
Students will analyze DC and AC circuits. This is an introductory course in the analysis of DC and AC linear circuits containing resistors, capacitors, inductors, dependent sources, operational amplifiers, and/or switches. Analyses of circuits are performed using circuit laws and network theorems. Topics will include Ohm's Law, Kirchhoff's Laws, nodal and mesh analyses, Thevenin's and Norton's Theorems, superposition, first and second order RLC circuits, sinusoidal steady-state analysis, phasors, AC power calculations, power transfer and energy concepts. Lab component includes construction, testing, simulation and analysis of linear electrical circuits. (C-ID ENGR 260 and ENGR 260L)

Lecture Hours: 3 Lab Hours: 3 Repeatable: No Grading: L
Prerequisite: PHYS 004B with C or better
Corequisite: MATH 078 previous or concurrent
Advisory Level: Read: 3 Write: 3
Transfer Status: CSU/UC   Degree Applicable: AA/AS
CSU GE: None   IGETC: None   District GE: None

ENGR 038   Materials Science and Engineering   3 Units
Students will learn the structure-property-processing relationships in materials. Materials used in engineering applications include metals, ceramics, polymers, and semiconductors. Students will gain an understanding of the effects of heat, stress, imperfections, and chemical environments upon material properties and performance and selecting appropriate materials to meet engineering design criteria. (C-ID ENGR 140 and ENGR 140B when combined with ENGR 038L)

Lecture Hours: 3 Lab Hours: None Repeatable: No Grading: L
Prerequisite: CHEM 001A or CHEM 001AH and PHYS 004A; all with C or better
Advisory Level: Read: 3 Write: 3
Transfer Status: CSU/UC   Degree Applicable: AA/AS
CSU GE: None   IGETC: None   District GE: None

ENGR 038L   Materials Science and Engineering Lab   1 Unit
Students will explore the structure-property-processing relationships in materials through experiments. Students will directly observe the structures and behaviors discussed in the lecture course. Students will learn to operate testing equipment, analyze experimental data, and to prepare reports. (C-ID ENGR 140L and ENGR 140B when combined with ENGR 038)

Lecture Hours: None Lab Hours: 3 Repeatable: No Grading: L
Prerequisite: CHEM 001A or CHEM 001AH and PHYS 004A; all with C or better
Corequisite: ENGR 038
Advisory Level: Read: 3 Write: 3
Transfer Status: CSU/UC   Degree Applicable: AA/AS
CSU GE: None   IGETC: None   District GE: None