ENGINEERING (ENGR)

ENGR 6 • ENGINEERING GRAPHICS

Units: 4
Hours: 3 lecture, 3 laboratory per week (72 total per quarter)
Prerequisite: MATH 48C or equivalent.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU/UC
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

The application of orthographic projection to detail and assembly drawings, with examples from various engineering fields. Geometric construction, sketching, dimensioning for interchangeable assembly and specification of materials. Graphical analysis, documentation, and presentation of engineering information. Theory of orthographic projection and its application to graphical solution of the more advanced three-dimensional space problems. Investigation of relationships between points, lines, planes, and solids. Use of solid modeling computer program in carrying out the above course components.

ENGR 10 • INTRODUCTION TO ENGINEERING

Units: 5
Hours: 4 lecture, 3 laboratory per week (84 total per quarter)
Advisory: UC will accept for transfer credit either ENGR 10 or ENGR 49, not both; not open to students with credit in ENGR 20.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU/UC
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

A first experience in engineering, this course is open to all students intending to major in engineering or who want to try out engineering. Students will gain experience with project management and design, insights from discussions on ethics and environmental impact, and skills in written and oral technical communication.

ENGR 11 • PROGRAMMING & PROBLEM-SOLVING IN MATLAB

Units: 5
Hours: 4 lecture, 3 laboratory per week (84 total per quarter)
Prerequisite: MATH 1B or 1BH.
Advisory: Demonstrated proficiency in English by placement via multiple measures OR through an equivalent placement process OR completion of ESLL 125 & ESLL 249.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU/UC
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

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.

ENGR 28 • INTRODUCTION TO BIOENGINEERING

Units: 4
Hours: 4 lecture per week (48 total per quarter)
Advisory: Not open to students with credit in BIOL 28.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU/UC
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable
Cross-Listed: BIOL 28

Introduction to the field of bioengineering. Topics covered will include an overview of basic biological systems and biochemistry for non-biology majors, how the basic principles of engineering and physics can be applied to problems in biological science, and an overview of current trends in bioengineering, including: medical devices, biomaterials, bioinstrumentation, computational biology, and agricultural biotechnology.

ENGR 35 • STATICS

Units: 5
Hours: 5 lecture per week (60 total per quarter)
Prerequisite: MATH 1B or 1BH; PHYS 4A.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU/UC
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Principles of statics as applied to particles and rigid bodies in two and three dimensions under concentrated and distributed force systems. Equilibrium conditions in structures, machines, beams, and cables. Determination of centroids and moments of inertia. Dry friction and methods of virtual work.

ENGR 37 • INTRODUCTION TO CIRCUIT ANALYSIS

Units: 5
Hours: 5 lecture per week (60 total per quarter)
Prerequisite: PHYS 4B.
Corequisite: MATH 2A.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU/UC
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Analysis of lumped, linear circuits in steady state DC and AC. Principals and Laws are used, such as Ohm's Law and Kirchhoff's Law, Thevenin's and Norton's Theorem. Methods of analyzing circuits also include Linearity, Superposition, Source Transformation, and Maximum Power Transfer. First and second order circuits' complete response, AC power and steady-state analysis, frequency and transient response and circuits using op-amps.

ENGR 37L • CIRCUIT ANALYSIS LABORATORY

Units: 2
Hours: 1 lecture, 3 laboratory per week (48 total per quarter)
Corequisite: Completion of or concurrent enrollment in ENGR 37.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU/UC
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Practical verification of theorems and concepts learned in ENGR 37 through experimentation. Included will be experiments in DC and AC circuits involving the utilization of a variety of instruments, such as DC/AC meters, regulated power supplies, signal generators, oscilloscopes and frequency counters.

ENGR 45 • PROPERTIES OF MATERIALS

Units: 5
Hours: 4 lecture, 3 laboratory per week (84 total per quarter)
Prerequisite: CHEM 1B and MATH 1C.
Corequisite: Completion of or concurrent enrollment in PHYS 4B.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU/UC
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Properties of engineering materials related to basic structure; applications to the selection and use of engineering materials.

ENGR 47 • DYNAMICS

Units: 5
Hours: 5 lecture per week (60 total per quarter)
Prerequisite: ENGR 35.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU/UC
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Intended for engineering majors planning to transfer to four-year institutions. Covers the fundamentals of kinematics and kinetics of particles and rigid bodies. Topics include general and relative motion, force and acceleration, work and energy, and impulse and momentum analyzed in two and three dimensions. Provides an introduction to vibrations and oscillations.

ENGR 61A • INTRODUCTION TO SEMICONDUCTOR TECHNOLOGY

Units: 5
Hours: 5 lecture per week (60 total per quarter)
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

This course provides an overview of the semiconductor industry. Focus on clean room safety, wafer processing, and troubleshooting. Students practice scientific thinking and have exposure to running experiments.

ENGR 61B • VACUUM SYSTEMS

Units: 5
Hours: 5 lecture per week (60 total per quarter)
Prerequisite: CHEM 1A.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

This course explores the theory behind vacuum systems. Students gain an understanding of vacuum system basics and exposure to different vacuum pumps and their capabilities.

ENGR 70R • INDEPENDENT STUDY IN ENGINEERING

Units: 1
Hours: 3 laboratory per week (36 total per quarter)
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Provides an opportunity for the student to expand their studies in Engineering beyond the classroom by completing a project or an assignment arranged by agreement between the student and instructor. The student is required to contract with the instructor to determine the scope of assignment and the unit value assigned for successful completion. Students may take a maximum of 6 units of Independent Study per department.

ENGR 71R • INDEPENDENT STUDY IN ENGINEERING

Units: 2
Hours: 6 laboratory per week (72 total per quarter)
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Provides an opportunity for the student to expand their studies in Engineering beyond the classroom by completing a project or an assignment arranged by agreement between the student and instructor. The student is required to contract with the instructor to determine the scope of assignment and the unit value assigned for successful completion. Students may take a maximum of 6 units of Independent Study per department.

ENGR 72R • INDEPENDENT STUDY IN ENGINEERING

Units: 3
Hours: 9 laboratory per week (108 total per quarter)
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Provides an opportunity for the student to expand their studies in Engineering beyond the classroom by completing a project or an assignment arranged by agreement between the student and instructor. The student is required to contract with the instructor to determine the scope of assignment and the unit value assigned for successful completion. Students may take a maximum of 6 units of Independent Study per department.

ENGR 73R • INDEPENDENT STUDY IN ENGINEERING

Units: 4
Hours: 12 laboratory per week (144 total per quarter)
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: CSU
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Provides an opportunity for the student to expand their studies in Engineering beyond the classroom by completing a project or an assignment arranged by agreement between the student and instructor. The student is required to contract with the instructor to determine the scope of assignment and the unit value assigned for successful completion. Students may take a maximum of 6 units of Independent Study per department.

ENGR 101A • ADVANCED MANUFACTURING

Units: 5
Hours: 5 lecture per week (60 total per quarter)
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

This course provides an understanding of industry technology and exposure to advanced manufacturing, pneumatics, electronics, mechatronics, and vacuum systems.