ENGINEERING TECHNOLOGIES (ENGR)

ENGR-120 Principles of Engineering Technology
3 Units (LAB 48-54, LEC 32-36)

This course includes lecture and lab components and is for students interested in pursuing a career in Engineering Technology. Students will explore technology systems and engineering processes to learn how math, science, and technology impact society. Topics include the design processes, communication and documentation, engineering systems, energy and power, statics, properties of materials, materials testing, control systems, quality assurance and reliability.

Transfers to both UC/CSU

ENGR-121 Introduction to Engineering Design
3 Units (LAB 48-54, LEC 32-36)

This course provides a basic understanding of the design process used in engineering fields and the application of computer modeling software. Emphasis is placed on the design process, geometric relationships, visualization, technical sketching, modeling, model documentation, assemblies and production processes.

Transfers to both UC/CSU

ENGR-122 Electronics for Engineering Technologists (formerly ENGR-522)
3 Units (LAB 48-54, LEC 32-36)

This course will cover the application of electronics in engineering technology. The topics studied include safety, Ohm's Law, engineering notation, direct current circuits, capacitance, inductance, reactance, impedance, analog and digital waveforms, basic motors, number systems, logic gates, Boolean algebra, flip-flops, shift registers, and microprocessors. Techniques in computer simulation and electrical measurements are emphasized. (formerly ENGR 522)

Prerequisite: ENGR-121 (with a grade of C or better).
Transfers to both UC/CSU

ENGR-124 Civil Engineering and Architecture (formerly ENGR-524)
3 Units (LAB 48-54, LEC 32-36)

This course includes a lab and lecture component and will explore the integration of engineering technology principles with civil and architectural applications. Topics include historical understandings, career fields, residential design, commercial applications, commercial building design and public applications. (formerly ENGR 524)

Prerequisite: ENGR-120 and ENGR-121 (with a grade of C or better).
Transfers to CSU only

ENGR-125 Engineering Design and Development
3 Units (LAB 48-54, LEC 32-36)

This course is a capstone course. Teams of students will work together to design and construct solutions to engineering problems. Emphasis will be placed on research methods, design problem statements, continuous improvement, cost analysis, prototyping, testing methods, project construction, and project presentation.

Prerequisite: ENGR-122, ENGR-124 and ENGR-523 (with a grade of C or better).
Transfers to both UC/CSU

ENGR-154 Computer Aided Drafting I
3 Units (LAB 48-54, LEC 32-36)

This course is an introductory course to Computer Aided Drafting (CAD). This course provides students with the necessary skills for entry level drafting careers in fields employing architectural and engineering drawings, surveying and planimetric mapping, and computer aided mapping skills, such as Mechanical Drafting Technicians, Cartography, Geographic Information Systems. Applying cutting edge technology in the field of drafting, students learn concepts of engineering drawing and drafting plans through digital manipulation of design elements.

Recommended Preparation: ENGL-C1000 or computer experience or the completion of CSIS-101.
Transfers to both UC/CSU

ENGR-155 Computer Aided Drafting II
3 Units (LAB 48-54, LEC 32-36)

This course provides students with the necessary skills for drafting careers in fields that employ architectural engineering drawings surveying, planimetric mapping, computer aided mapping skills such as Geographic Information Systems and Manufacturing. Applying cutting edge technology in the field of drafting students learn concepts of engineering drawing and drafting plans through digital manipulation of design elements. Exercises focus on coordinate geometry modeling programming and plotting.

Prerequisite: ENGR-154 (with a grade of C or better).
Transfers to both UC/CSU

ENGR-164 Plane Surveying I
3 Units (LAB 24-27, LEC 40-45)

This course will cover surveying fundamental skills which includes; use and proper care of surveying instruments, horizontal, vertical and angular measurements, layout and traverse procedures, computation, analysis, and adjustments of the traverse. Students will also get an introduction to the Public Land Survey System, State Plane Coordinates, Global Positioning System, and state/local laws.

Transfers to both UC/CSU

ENGR-180 Introduction to Engineering
2 Units (LEC 32-36)

This course introduces the career opportunities and skills needed to become an engineer or work as engineering support. Students will learn engineering communication standards for laboratory report writing, graphical presentations, and problem solving. Methods will include the scientific method and introduction to engineering design processes. This course is recommended for all students considering a career in engineering or engineering support.

Transfers to both UC/CSU
C-ID: ENGR 110

ENGR-181 Statics
3 Units (LEC 48-54)

This course lays the foundation of Newtonian mechanics and serves as the building block for further courses in analysis and design. A study of two- and three-dimensional equilibrium of particles and rigid bodies; concentrated and distributed force systems; shear and bending moment stresses in beams; analysis of frames, machine and trusses; force resultant using vectors in tow and three dimension; non-coplanar force system, friction forces; center of gravity and moment of inertia.

Prerequisite: PHY-201 (with a grade of C or better) and MATH-212 (with a grade of C or better).
Transfers to both UC/CSU
C-ID: ENGR 130

ENGR-182 Strength of Materials (formerly Strength and Materials)
3 Units (LEC 48-54)

This course teaches engineers how to analyze material selection and calculate physical stress parameters. Analyses will include plane stress-strain, axial, torsional, bending and shear stresses, including combined loads, Mohr's Circle, principal stresses and strains, and pressure vessels. Students will study Hooke's Law and material properties; allowable stress and factor of safety; statically indeterminate members; shear and moment diagrams; moment-area; slope by double integration; singularity functions; superposition; Catigliano methods; thermal expansion; indeterminate forms; and column buckling.

Prerequisite: ENGR-181 (with a grade of C or better).
Transfers to both UC/CSU
C-ID: ENGR 240

ENGR-183 Programming with MATLAB for Engineers and Scientists
4 Units (LAB 48-54, LEC 48-54)

This course teaches computer programming using MATLAB's language, focusing on syntax, control, and data structures to solve engineering problems. It covers numerical methods like root-finding and interpolation, along with data analysis and visualization for scientific and engineering use. The course also includes linear and nonlinear optimization techniques.

Prerequisite: MATH-211 (with a grade of C or better).
Transfers to both UC/CSU
C-ID: ENGR 120

ENGR-184 Engineering Circuit Analysis
4 Units (LBE 48-54, LEC 48-54)

This course covers electric circuit fundamentals, analysis techniques, and semiconductor devices. Topics include Ohm's law, Kirchhoff's laws, transient analysis, steady-state analysis, frequency response, Bode plots, filters, amplifiers, and CMOS logic gates. Integrated SPICE simulation and hands-on labs provide practical experience.

Prerequisite: PHY-202 (with a grade of C or better).
Prerequisite/Corequisite: MATH-215
Transfers to both UC/CSU

ENGR-185 Engineering Dynamics
3 Units (LEC 48-54)

This course explores particle and rigid body dynamics principles in engineering applications. Students learn kinematics, kinetics, vector mathematics, coordinate systems, Newton's laws, work-energy, impulse-momentum, moments of inertia, Euler's equations, and vibration analysis. The course emphasizes mathematical modeling, problem-solving, and real-world applications.

Prerequisite: ENGR-181 (with a grade of C or better).
Transfers to both UC/CSU
C-ID: ENGR 230

ENGR-299 Special Projects: Engineering Technology
1-3 Unit (IS 16-54)

Students with previous course work in the program may do special projects that involve research and special study. The actual nature of the project must be determined in consultation with the supervising instructor.

Prerequisite: Two Engineering Technology classes must be completed prior to enrollment; a Special Projects contract must be completed with the instructor prior to enrollment.
Transfers to CSU only

ENGR-505 Organizational Behavior (formerly ENGR-108)
3 Units (LEC 48-54)

This course covers the impact of different management practices and leadership styles on worker satisfaction and morale, organizational effectiveness, productivity, and profitability. Topics include coverage of formal and informal organizations, group dynamics, motivation, and managing conflict and change. Upon completion, students should be able to analyze different types of interpersonal situations and determine an appropriate course of action. *Cross-listed as MGT-505. (formerly ENGR 108)

Transfers to CSU only

ENGR-523 Computer Integrated Manufacturing (formerly ENGR-123)
3 Units (LAB 48-54, LEC 32-36)

This course explores the integration of engineering technology principles and automation in manufacturing environments. Topics include 3-D design and modeling, CNC programming and production, rapid prototyping, robotics and manufacturing systems. (formerly ENGR 123)

Prerequisite: ENGR-120 and ENGR-121 (with a grade of C or better).
Transfers to both UC/CSU

ENGR-549 Work Experience Education: Engineering Technology
0.5-8 Units WEE 24-432

This experiential learning course places students in supervised internships related to their academic major or career interests. Through hands-on work experience, students will build upon classroom-based learning and develop transferable skills. Internship work sites must be approved by the college prior to enrollment.

Other Enrollment Criteria: Each student must be enrolled for the full semester and have completed one course in the discipline. Student must also complete a WEE Orientation and Training Plan (Agreement) prior to registration. Please refer to the Work Experience Student Handbook for specific information.
Transfers to CSU only
Offered as Pass/No Pass Only

ENGR-565 Plane Surveying II (formerly ENGR-165)
3 Units (LAB 24-27, LEC 40-45)

This advanced course is a continuation of Plane Surveying I and designed for students seeking a career in surveying and engineering. Students will compute horizontal and vertical curves, earthworks, and adjustment of level nets. Students will be introduced to the Public Land Survey System, California Coordinate System, easements and property descriptions, astronomic observations, Global Information System, and photogrammetry. (formerly ENGR 165)

Prerequisite: ENGR-164 (with a grade of C or better).
Transfers to both UC/CSU

ENGR-566 Legal Aspects of Surveying (formerly ENGR-166)
3 Units (LEC 48-54)

This course teaches the legal aspects of public land surveys, municipal property surveys, and applicable laws. The course is designed for surveyors, engineers, realtors, and any person who deals with property descriptions. Topics include history of land survey system, establishment of township subdivisions, reestablishing private subdivisions, and reading, interpreting, and writing land descriptions. (formerly ENGR 166)

Recommended Preparation: ENGL-C1000.
Transfers to CSU only

ENGR-567 Global Positioning Systems for Surveying (formerly ENGR-167 Global Positioning Systems)
3 Units (LAB 24-27, LEC 40-45)

This course provides students with fundamental knowledge for applying GPS technology in the field for engineering based operations. Emphasis is placed on satellite systems, measurements for positional accuracy, statistical adjustments, post-processing, real-time and post-differential correction, field data collection, and mapping models. The course provides hands-on experience with GPS instruments used for field-based survey and planimetric mapping. (formerly ENGR 167)

Recommended Preparation: MATH-105.
Transfers to CSU only

ENGR-710 Logistics Fundamentals
3 Units (LEC 48-54)

This course equips students with a fundamental understanding of what is arguably the most critical and complex component of global supply chain: Logistics. Topics include: activities of logistics, demand forecasting, customer service, intermodal, and the exciting careers in the logistics industry.

Not transferable

ENGR-711 Logistics Leadership
3 Units (LEC 48-54)

This leadership course will balance the essential theory with the latest applications from today's logistics environment and deliver engaging highlights, insights and leadership examples in well-known, world-class companies. Self-assessments, quizzes and updated skill-building exercises guide students in applying and developing leadership abilities.

Not transferable

ENGR-712 Logistics E-Commerce for Entrepreneurs
3 Units (LEC 48-54)

This course is designed to show students the value of logistics to e-commerce. Students will be able to apply logistics principles for immediate application to their existing or newly designed e-commerce store. Students will also gain knowledge, concepts and application on how to design their own e-commerce store through various platforms. Students will gain an understanding of the vital role of logistics fulfillment centers and the variety of distribution channels that provide the final mile to e-commerce companies.

Not transferable

ENGR-713 Logistics Safety Principles
3 Units (LEC 48-54)

This course introduces students to the basics of workplace safety, while examining the latest standards of OSHA, NIOSH, and other US regulatory bodies in the context of new and emerging industry trends. This course suits students who are also seeking growing and promising careers as industry safety professionals.

Not transferable

ENGR-756 SolidWorks I
3 Units (LAB 48-54, LEC 32-36)

This course is designed to introduce the student to three-dimensional parametric solid modeling with SolidWorks. Students will begin with basic parametric solid modeling techniques advancing into complex assemblies. This course will prepare students for the Certified SolidWorks Associate (CSWA) exam.

Recommended Preparation: Computer experience or CSIS-101.
Not transferable