

ENGINEERING

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

ENGINEERING (ENGR)

DIVISION: Math and Science
 DEPARTMENT: Engineering
 DEAN: Danny Nguyen
 DIVISION CHAIR: Thais Winsome
 DEPT CHAIR: Dr. Clint Poe
 PHONE: 408-855-5262
 COUNSELING: 408-855-5030

Engineering is the application of the theories and principles of science and math to solve practical technical problems. Engineers develop useful applications that will benefit humankind, such as inventing machines or designing a process to mass-produce a product. In addition to the design and development of new products and processes, engineers also work in testing, production, maintenance, marketing, and sales. Engineers are technical problem-solvers.

Student Learning Outcomes:

Students who complete the Engineering Program will:

- Formulate logical problem solving approaches, generate solutions, and assess the reasonableness of the solutions for engineering type analysis problems.
- Design, construct, and produce creative solutions to engineering problems by applying the engineering design process and identifying pertinent design parameters based on the fundamental physics governing a system
- Demonstrate an understanding of the course material by writing clear, logical, and concise technical reports as well as presenting coherent technical presentations.
- Develop team building skills and improve team work amongst a diverse group of engineers and non-engineers by cultivating an awareness of different social /economic / educational backgrounds

Areas of Specialization:

- Aerospace Engineering
- Biological Engineering
- Chemical Engineering
- Civil & Environmental Engineering
- Electrical and Computing Engineering
- Industrial Engineering
- Materials Engineering
- Mechanical Engineering
- Nuclear Engineering
- Software Engineering

Other Areas:

- Process Design
- Instruction
- Patent Law
- Sales and Marketing
- Technical Management

Highlights:

- Professional, knowledgeable, and helpful instructors and staff.
- A complete engineering program which allows for easy transfer to many 4-year schools.
- Many courses have a computer component.
- Links to local industry.
- Many diverse students with industry experience.

Engineering - A.S. Degree

Complete 18 units from:	Units
ENGR 003 How Everyday Technology Works	4.0
ENGR 010 Introduction To Engineering	4.0
ENGR 023 Mechanics: Statics.....	3.0
ENGR 024 Introduction to Circuit Analysis	3.0
ENGR 024L Introduction to Circuit Analysis Laboratory	1.0
ENGR 025 Engineering Graphics and Design.....	4.0
ENGR 026 Engineering Materials.....	4.0
ENGR 030 Introduction to Computing for Engineers	4.0
PHYS 004A..... Engineering Physics - Mechanics.....	5.0
PHYS 004B Engineering Physics - Electricity and Magnetism.....	5.0
PHYS 004C Engineering Physics - Light and Heat	5.0
PHYS 004D Atomic Physics	2.0
Total Program A.S. Degree Requirements:	18.0*

*NOTE: A minimum of 11 units must be in Engineering courses.

ENGINEERING (ENGR)

003 • HOW EVERYDAY TECHNOLOGY WORKS 4.0 units

Total Lecture 54 hours, Total Lab 54 hours

Advisory: MATH 903

Acceptable for credit: University of California, California State University

This course is intended for students of all disciplines who are interested in how everyday things work. Students will experiment with technology to discover principles of science. Concepts such as force, work, energy, power, liquids and gasses, heat transfer, electricity, magnetism, electronics, light, materials science, and time are explored through experimentation and observation. Students will experience through class demonstrations and hands-on laboratories the concepts presented by the instructor. Phenomena such as how refrigerators cool food, microwaves heat liquids, stereos transmit sound, and airplanes fly will be addressed in this class. A laboratory is included which offers experiments on campus and field trips to the local industry. *Materials Fee. Pass/No Pass Option.*

010 • INTRODUCTION TO ENGINEERING 4.0 units

Total Lecture 54 hours, Total Lab 54 hours

Advisory: MATH 903

Acceptable for credit: University of California, California State University

This course exposes students to the field of engineering and presents the skills necessary to succeed as engineers. The different branches of engineering and the nature of engineering work are explored. Design engineering and evaluation are addressed through multiple team-based design projects and engineering problem-solving topics. Communication skills for technical presentations and reports are developed through practical engineering scenarios. Guest speakers from local engineering firms and tours to local companies are included. *Pass/No Pass Option.*

023 • MECHANICS - STATICS 3.0 units

Total Lecture 54 hours

Advisory: Eligibility for ENGL 001A and READ 053

Prerequisite: MATH 003B and PHYS 004A

Acceptable for credit: University of California, California State University

This course applies the principles of mechanics to evaluate the static equilibrium of engineering structures. Topics include the equilibrium of particles, equivalent force systems, equilibrium of rigid bodies, distributed loads, analysis of structures, internal forces in beams, method of virtual work, and friction. This course is primarily for engineering transfer students. *This course may also be offered via distance learning. Grade Only.*

024 • INTRODUCTION TO CIRCUIT ANALYSIS 3.0 units

Total Lecture 54 hours

Advisory: MATH 004A

Prerequisite: MATH 003B and PHYS 004B

Acceptable for credit: University of California, California State University

This is an introductory course in the analysis of electrical circuits. The emphasis is on setting up equations arising from the applications of Kirchoff's laws, Ohm's law, and Thevenin's theorem, both in DC and AC circuits. Topics include mesh and nodal analysis, periodic forcing functions, phasors, frequency response, resonant circuits, natural and complete responses, dependent sources, operational amplifiers, and analog signal applications. This course is primarily for engineering transfer students. *Grade Only.*

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024L • INTRODUCTION TO CIRCUIT ANALYSIS LAB 1.0 unit

Total Lab 54 hours

Advisory: MATH 003B, PHYS 004B

Corequisite: ENGR 024

Acceptable for credit: University of California, California State University

This course is an introduction to the basic instruments and experimental techniques used in electric circuit analysis, such as circuit simulation software. This course is primarily for engineering transfer students. *Grade Only.*

025 • ENGINEERING GRAPHICS AND DESIGN 4.0 units

Total Lecture 54 hours, Total Lab 54 hours

Acceptable for credit: University of California, California State University

This course develops graphical visualization and design skills by applying graphics based engineering methods. The course also teaches engineering design by applying the conceptual design process and integrating graphics into design projects. Graphics assignments develop sketching, manual drafting, and computer aided drafting (CAD) skills. This course is primarily for engineering transfer students. *Grade Only.*

026 • ENGINEERING MATERIALS 4.0 units

Total Lecture 54 hours, Total Lab 54 hours

Prerequisite: CHEM 001A, MATH 003B, PHYS 004A

Acceptable for credit: University of California, California State University

This course provides an introduction to the properties of engineering materials and their relation to the internal structure of materials. Mechanical, electrical, and optical properties of metals, ceramics, polymers, and semiconducting materials are addressed. A laboratory is included which uses experiments on campus and field trips to local industry. This course is primarily for engineering transfer students. *Grade Only.*

030 • INTRODUCTION TO COMPUTING FOR ENGINEERS 4.0 units

Total Lecture 54 hours, Total Lab 54 hours

Advisory: MATH 003A and CIS 002

Acceptable for credit: University of California, California State University

This course introduces engineering problem solving using computer programming. Computers are used to solve a variety of problems ranging from evaluating a simple function to solving a system of linear equations. A disciplined approach to problem solving using an industry standard high level language such as C++ is presented. Topics include: problem solving strategies, modular programming design, sample engineering problems, and application of high-level language fundamentals. This course is primarily for engineering transfer students. *Pass/No Pass Option.*

051 • INTRODUCTION REMOTE SENSING 4.0 units

Total Lecture 54 hours, Total Lab 72 hours

Advisory: ENGR 050

Acceptable for credit: California State University

Remote sensing is the science and art of acquiring information of an object, area, or phenomenon without being in direct contact with that object, area, or phenomenon. This course will provide students with an overview of the field of remote sensing and present the ways in which remotely sensed data can be used in scientific investigations and resource management. Topics addressed will include the electromagnetic spectrum, sensor systems, image analysis, applications, and the integration with Geographic Information Systems (GIS). *Pass/No Pass Option.*

ENGLISH (ENGL)

DIVISION: Language Arts
DEPARTMENT: English
DEAN: Tim Karas
DIVISION CHAIR: Myo Myint
DEPT CHAIR: Margaret Junker
OFFICE: MT-18A
PHONE: 408-855-5229
COUNSELING: 408-855-5030

The English department teaches skills that are universal to every other discipline. Taking courses in English increases a student's chances of success in every other area. The ability to read effectively and to write expressively will prove invaluable for any student.

Student Learning Outcomes:

Upon completion of the sequence of English composition courses, students will develop the skills and confidence to write successfully in academic and workplace settings:

- Write focused, organized, well-developed essays that support clear thesis statements and demonstrate competence in standard English grammar and usage;
- Demonstrate critical thinking skills by analyzing and evaluating academic essays and literature;
- Formulate and clearly communicate their positions on diverse issues;
- Write a research paper that demonstrates the effective evaluation, integration, and documentation of sources.

Possible Career Options:

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|-----------------------|----------------------------|
| • Advertising | • Management |
| • Business | • Marketing Communication |
| • Civil Service | • Politics |
| • Editing | • Public Relations |
| • Information Systems | • Publishing |
| • Insurance | • Research |
| • Journalism | • Teaching |
| • Law | • Technical Communications |
| • Library Science | • Writing |

Some career options require more than two years of college study.

Highlights:

- Composition courses designed for all levels of ability.
- Transfer level literature and creative writing courses that meet CSU & UC requirements.
- On-line courses in composition & workplace writing.
- Experienced, innovative faculty, dedicated to student success.

ENGLISH (ENGL)

Placement in any English class is based on a placement test for new students or a grade of C or better in a previous course for continuing students. Students needing to take a placement test should contact the Counseling Center, room E1-301.

001A • ENGLISH COMPOSITION 3.0 units

Total Lecture 54 hours

Advisory: READ 053, LIB 010

Prerequisite: ENGL 908 or qualifying score on the English Placement Assessment. (Prior completion of English 108A, an older version of English 908, with a minimum grade of CR may be substituted for this prerequisite course.)

Acceptable for credit: University of California, California State University

This course emphasizes the techniques of English composition with emphasis on the process of learning to write clearly and effectively and to read analytically. English 1A fulfills the English requirement for the Associate Degree; this is a baccalaureate course. *This course may also be offered via distance learning. Grade Only.*