



Engineering Sciences

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Bachelor of Science Degree in Engineering Sciences

The Engineering Sciences degree at CSUB is an ABET Accredited program that provides a broad knowledge foundation featuring a core of Mechanical Engineering courses along with optional emphases in Biosystems and Agricultural Engineering, Energy and Power Engineering, Engineering Management, and Petroleum Engineering. This program was designed specifically to meet the needs of local industries. Students in the program will be well versed in general engineering principles and will gain industry experience through senior projects or internships with local companies and/or government agencies.

Career Opportunities

Graduates from CSUB's department of Physics and Engineering can pursue graduate studies or go on to challenging and productive careers in industry, government, education, or consulting in a wide range of fields such as:

- General Engineering
- Project Management
- Defense
- Applied Science
- Design
- Biotechnology
- Conservation
- Sound Engineering
- Medicine
- Law
- Business
- Aerospace
- Environmental Consulting
- Energy
- Petroleum Industry
- Education
- Instrumentation
- Agriculture



CSU Bakersfield

School of Natural Sciences,
Mathematics and Engineering



Bachelor of Science in Engineering Sciences

Degree Requirements

Required Math/Science/Engineering Courses

- ENGR 1618 Introduction to Engineering I (2)
- ENGR 1628 Introduction to Engineering II (2)
- ENGR 2070 Electric Circuits (4)
- ENGR 2110 Analytic Mechanics - Statics (3)
- ENGR 2120 Analytic Mechanics - Dynamics (3)
- ENGR 2130 Mechanics of Materials (3)
- ENGR 2140 Materials Science & Engineering (4)
- ENGR 2350 Engineering Graphics (2)
- ENGR 3110 Thermodynamics (4)
- ENGR 3120 Fluid Mechanics (4)
- ENGR 3300 Engineering Modeling & Analysis (3)
- ENGR 3310 Numerical Methods & Applications in Engineering (3)
- ENGR 4110 Heat Transfer (4)
- ENGR 4120 Machine Design (4)
- ENGR 4900 Senior Design Project A (2)
- ENGR 4910 Senior Design Project B (2)

Cognate Courses

- MATH 2310 or 2510 Calculus I (4)
- MATH 2320 or 2520 Calculus II (4)
- PHYS 2210 Physics for Scientists and Engineers I (4)
- PHYS 2220 Physics for Scientists and Engineers II (4)
- CHEM 1000 Foundations of Chemistry (3)
- CHEM 1001 Introduction to Laboratory in Chemistry (2)
- CHEM 1600 Foundations of Physical Chemistry (2)
- ECON 2018 Essentials of Micro-Economics (3)
- PHIL 3318 Professional Ethics (3)

Additional Cognates

Mathematics and Science electives (7 units minimum) from any majors level BIOL, CHEM, GEOL, or PHYS; MATH 2530, 2540, 4500.

Biosystems & Agricultural Engineering Emphasis students must take BIOL 2010, 2110, or 2120.

Petroleum Engineering Emphasis students must take GEOL 4060.

Engineering Electives and Available Emphases

Biosystems and Agricultural Engineering Emphasis

- ENGR 3400 Soil and Water Resource Management (3)
- ENGR 3410 Agricultural Machines and Instrumentation (4)
- ENGR 4410 Environmental Engineering (3)
- ENGR 4420 Food & Bioprocess Engineering Unit Operations (3)

Energy and Power Engineering Emphasis

- ENGR 4610 Conventional Energy Production (3)
- ENGR 4620 Renewable Energy Production (3)
- ECE 3370 Power Systems Fundamentals (4)
- ECE 4380 Power System Operations with Renewable Energy Resources (3)

Engineering Management Emphasis

- ENGR 4200 Operations Research (3)
 - ENGR 4220 Project Management (3)
 - ENGR 4240 Quality Management (3)
 - ENGR 4260 Economics of Engineering Design (3)
- One additional unit that applies towards the B.S. in Engineering

Petroleum Engineering Emphasis

- ENGR 4520 Petroleum Production Engineering (3)
 - ENGR 4530 Reservoir Engineering (4)
 - ENGR 4540 Drilling Engineering & Completion Technology (4)
- Two additional units that apply towards the B.S. in Engineering

Other Engineering Electives

- ENGR 3070 Analog Electronics (3)
- ENGR 4700 Special Topics in Engineering Sciences (1-3)
- ENGR 4800 Research Participation (1-3)

NOTE: Students are not required to have an emphasis, in which case the 13 required elective units can be selected from any of the emphases.

General Education

The General Education program was designed to increase the relevance and coherence of students' general education experience and to provide and reinforce the skills necessary for their success in their university studies, their careers, and their other life pursuits.

Engineering Sciences majors are required to take 22 units of general education courses.

See University Catalog for details.



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