The Department of Mechanical Engineering at Pacific is accredited by the Accreditation Board for Engineering and Technology (ABET). The first two years of the program concentrate primarily on math, science, general education, and general engineering. During the last remaining years, students concentrate more on Mechanical Engineering topics. Several courses include a laboratory component, and a variety of equipment is available such as vibration and noise instruments, robots & mechatronic systems, a wind tunnel, furnaces, solar collectors, HVAC test equipment, a complete machine shop with CNC equipment, data acquisition systems, computer aided design software, materials testing machines, and analytical devices including optical and electron microscopes.

Mechanical Engineering is a very broad discipline. Consequently, Mechanical Engineers are typically found engaged in a diverse range of activities including machine design and analysis, product development, plant design, basic and applied research, environmental control, manufacturing, robotics, and technical sales. Mechanical Engineers are employed by virtually every industry that uses engineers such as public utilities, aerospace, consumer products, computers, bioengineering, food processing, automotive, or materials to name some examples. Some people earn a Mechanical Engineering degree, and then use their broad technical background to pursue graduate studies and careers in other fields such as business, law, or medicine.

The student majoring in Mechanical Engineering receives basic preparation in both of these areas, yet it is possible through several electives to emphasize Energy Systems or Mechanical Systems. Elective courses in the program are fulfilled by Engineering Electives chosen by the student, and in their Senior year the student performs a project in the Senior Design courses. A number of Mechanical Engineering courses are available as Engineering Electives, and certain courses in other engineering departments may also be taken as an Engineering Elective. Students with an interest in multidisciplinary areas such as mechatronics, bioengineering, nanotechnology, materials, or manufacturing can take electives or additional courses to develop their abilities in these areas.

MECHANICAL ENGINEERING CONCENTRATIONS
Although many specialties exist within Mechanical Engineering, two major focus areas are often described:

+ Energy Systems or Thermal Sciences – energy conversion and alternative energy, power devices, combustion, engineering design and analysis involving the transfer of heat and the flow of gases and liquids, and manufacturing of energy systems

+ Mechanical Systems or Applied Mechanics – machine design, structures, systems, and devices where considerations of motion, wear, fatigue, vibration, material selection, manufacturing, strength, and safety are important.

For more information contact:
Chi-Wook Lee, Ph.D
Professor and Chair
clee@pacific.edu | (209) 946-3083
Khoury Hall, 104
engineering.pacific.edu
## Development of Curriculum Plans
Students work with their academic advisers to develop curriculum plans in accordance with prerequisite requirements and course schedules. Students who successfully complete their coursework and complete 32 units of CO-OP can graduate in four years. Summer courses may be desirable or necessary to reduce the course-load during some fall or spring semesters.

## Mathematics & Basic Science (30 Units Minimum)
- **MATH 051 [4]** Calculus I
- **MATH 053 [4]** Calculus II
- **MATH 055 [4]** Calculus III
- **MATH 057 [4]** Differential Equations

### Mathematics & Science Elective [3-4]*
- **PHYSICS 053 [5]** Physics I
- **PHYSICS 055 [5]** Physics II
- **CHEM 024/024L [4]** Fundamentals of Chemistry with Lab

Choose from: **CHEM 025 [5]** General Chemistry 1, **CHEM 027 [5]** General Chemistry 2 or equivalent also acceptable

## Mechanical Engineering
- **MECH 015 [3]** Mechanical Engineering Graphics
- **MECH 100 [4]** Manufacturing Processes
- **MECH 120 [3]** Machine Design and Analysis I
- **MECH 125 [3]** Machine Design and Analysis II
- **MECH 129 [3]** Vibrations
- **MECH 140 [3]** Engineering Design/Senior Project I
- **MECH 141 [3]** Engineering Design/Senior Project II
- **MECH 150 [3]** Heat Transfer
- **MECH 157 [3]** Thermodynamics II
- **MECH 175 [4]** Systems Analysis and Control

### Engineering Elective [3-4]
- Engineering Elective [3] (Mech)
- Engineering Elective [3] (Mech)

**Mathematics & Basic Science (30 Units Minimum)

**Math/Science Elective and Engineering Electives:** Mechanical engineering students are required to take one MATH/SCIENCE ELECTIVE and at least 9 units of ENGINEERING ELECTIVES to meet the requirements for the B.S.M.E. Students should consult the Pacific General Catalog, course schedule, and their faculty advisor prior to selecting an elective. Prerequisite courses must be passed with a grade of C- or higher. (Some electives listed are not offered every year.)

**Math/Science Elective:** Only one math or science elective course is required. The Math/Science elective must be chosen from the following list of acceptable Math, Physics, Biology, Geoscience, or Bioengineering courses:

**Math:** 039, 72, 110, 131, 145, 152, 157  **Phys:** 057,101,105,125,170,181,183  **Geos:** 051,053,055,057,061,065

**Biology:** 041,051  **BENG:** 053,063 (only 3 units of BENG 053 or 063 are acceptable as Basic Science units.)

**Comp 051** cannot be accepted as a Math/Science elective unless a student transfers to Mech from CS or CPE.