

# Mechanical Engineering

College of Engineering and Mines  
Department of Mechanical Engineering  
(907) 474-7136  
www.uaf.edu/mechengr/

## M.S. Degree

Minimum Requirements for Degree: 30 credits

The mission of the mechanical engineering department at UAF is to offer the highest quality, contemporary education at undergraduate and graduate levels, and to perform research appropriate to the technical needs of the state of Alaska, the nation and the world.

Mechanical engineers conceive, plan, design and direct the manufacturing, distribution and operation of a wide variety of devices, machines and systems for energy conversion, environmental control, materials processing, transportation, materials handling and other purposes. Mechanical engineers are engaged in creative design, applied research, development and management.

The goals and objectives of the mechanical engineering program are to offer a mechanical engineering program designed to prepare its graduates for careers at the professional level; maintain, as a base, ABET accreditation of the undergraduate program; provide continuing educational opportunities for graduate engineers; serve as a resource of technical knowledge for the state as well as the nation; conduct research in all areas of mechanical engineering including cold regions mechanical engineering; and offer a graduate program in mechanical engineering at the M.S. and Ph.D. levels.

The educational objectives of the department are that graduates from the mechanical engineering program must be able to apply the knowledge of mathematics, science and engineering; be able to design and conduct experiments, as well as to analyze and interpret data; be able to design a system, component or process to meet desired needs; be able to function on multi-interdisciplinary teams; be able to identify, formulate and solve engineering problems; understand professional and ethical responsibility; be able to communicate effectively; have the broad education necessary to understand the impact of engineering solutions in a global and societal context; recognize the need for, and be able to engage in, life-long learning; understand contemporary issues; and be able to use the techniques, skills and modern engineering tools necessary for engineering practice. The department ensures that each course in the curriculum plays a meaningful role in satisfying one or more of these objectives.

## Graduate Program—M.S. Degree

1. Complete the following admission requirement:
  - a. Submit GRE scores.
2. Complete the general university requirements (page 182).
3. Complete the master's degree requirements (page 186).
4. Complete the following:

|   |   |
|---|---|
| ME 631—Advanced Mechanics of Materials..... | 3 |
| ME 634—Advanced Materials Engineering ..... | 3 |
| ME 641—Advanced Fluid Mechanics.....        | 3 |
| ME 642—Advanced Heat Transfer.....          | 3 |
| ME 608—Advanced Dynamics.....               | 3 |
5. Complete the thesis or non-thesis requirements:

### Thesis

- a. Complete the following:

|                    |   |
|--------------------|---|
| ME 699—Thesis..... | 6 |
| Electives*.....    | 9 |
- b. Minimum credits required.....30

### Non-Thesis

- a. Complete the following:

|                     |    |
|---------------------|----|
| Electives*.....     | 12 |
| ME 698—Project..... | 3  |
- b. Minimum credits required.....30

\*ME or other engineering, science, or mathematics courses approved by the student's advisory committee.

See Engineering for Ph.D. degree program.