

PROGRAM EDUCATIONAL OBJECTIVES AND OUTCOMES

Program Educational Objectives

Expanding upon the mission statement, the Mechanical and Aerospace Engineering Department lists six specific undergraduate Mechanical Engineering Program Educational Objectives. These objectives are fully consistent with Utah State University's mission as a land-grant institution.

Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve. MAE's Program Educational Objectives are:

- 1) Graduates will succeed in entry-level engineering positions with mechanical, aerospace, computational or manufacturing firms in regional, national, or international industries, and with government agencies.
- 2) Graduates will succeed in the pursuit of advanced degrees in engineering or other fields where a solid foundation in mathematics, science, and engineering fundamentals is required.
- 3) Graduates will be able to synthesize mathematics, science, engineering fundamentals, and laboratory and work-based experiences to formulate and solve engineering problems in both thermal and mechanical systems areas.
- 4) Graduates will have proficiency in computer-based engineering, including modern numerical methods, software design and development, and the use of computational tools.
- 5) Graduates will be prepared to communicate and work effectively on team-based engineering projects.
- 6) Graduates will recognize the importance of, and have the skills for, continued independent learning.

Program Outcomes

Program outcomes are statements that describe what units of knowledge or skill students are expected to acquire from the program to prepare them to achieve the program educational objectives. These are typically demonstrated by the student and measured by the program at the time of graduation.

ABET 2008-2009 Criteria for Accrediting Engineering Programs states that each student graduating with a BS degree within the MAE program is expected to have:

- a) an ability to apply knowledge of mathematics, science, and engineering,
- b) an ability to design and conduct experiments, as well as to analyze and interpret data,
- c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability,
- d) an ability to function on multi-disciplinary teams,
- e) an ability to identify, formulate, and solve engineering problems,
- f) an understanding of professional and ethical responsibility,

- g) an ability to communicate effectively,
- h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context,
- i) a recognition of the need for, and an ability to engage in life-long learning
- j) a knowledge of contemporary issues,
- k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- l) an ability to work professionally in both thermal and mechanical system areas including the design and realization of such systems.