Student Learning Objectives

Educational Objectives:

Graduates of the B.S. in Industrial Engineering and Mechanical Engineering Degree Programs will be able to achieve the following professional objectives:

• Think critically, creatively and rigorously and employ engineering methods to identify and solve important problems in industry, business, government and academe.
• Communicate effectively and function cooperatively in professional contexts.
• Approach professional practice responsibly and ethically and with an awareness of business, environmental, safety, cultural, societal and global concerns.
• Demonstrate professional leadership.
• Employ their engineering education as a foundation for advanced study, life-long learning and career development in engineering, management and other professional fields.

Program Outcomes (the “ABET 11”):

• An ability to apply knowledge of mathematics, science, and engineering
• An ability to design and conduct experiments, as well as to analyze and interpret data
• 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
• An ability to function on multi-disciplinary teams
• An ability to identify, formulate, and solve engineering problems
• An understanding of professional and ethical responsibility
• An ability to communicate effectively
• The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
• A recognition of the need for, and an ability to engage in life-long learning
• A knowledge of contemporary issues
• An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Assessment tools

• Indirect: employer feedback; feedback from Industrial Advisory Board; faculty course/outcome evaluation; course evaluations; collection of unsolicited comments.
• Direct: Student evaluation by outcome and course. Student course grades.

Highlighted recent activities

• The process of outcomes assessment now includes an additional direct outcome assessment, reducing our dependence on student survey data. All students in selected courses are now graded by the instructor in specified program outcomes.
• The MIE Department Undergraduate Committee regularly evaluates all program data and recommends program revisions and other actions to the full MIE faculty.
• Reflecting opinions of students, Industrial Advisory Board members and faculty, the creation of an “Innovation Shop” has enabled us to integrate more project-based, hands-on learning, into a required junior level design course, a senior mechatronics elective and the senior capstone design course in Mechanical Engineering.