

Department of Mechanical Engineering and Applied Mechanics North Dakota State University

Vision

To become nationally recognized and respected for excellence in engineering education, research, and service to local and regional industries.

Mission

The Department of Mechanical Engineering and Applied Mechanics at NDSU will contribute to the aspirations of a land-grant university in the three primary components of education, research, and service. In support of these endeavors, the mission of the department is to:

- Educate undergraduate and graduate students in the fundamentals of the discipline, prepare graduates (BS, MS, or PhD) to effectively function in society in the field of their choice, and provide the learning skills to adapt to evolving personal and professional goals.
- Develop and maintain high quality research programs in traditional and emerging areas that build on the diverse strengths of the faculty, foster interdisciplinary collaborations, and address national and global needs.
- Serve the needs of the profession, the state of North Dakota, and regional industries to promote and enhance economic development opportunities.

Educational Objectives

In support of the mission of the MEAM Department, the educational objectives of the program are to produce engineering graduates who:

- Are well educated in the fundamentals of the discipline, and possess the ability and willingness to adapt to emerging technologies through continued professional development.
- Will contribute in a competent manner to the engineering profession in the field of their choice.
- Demonstrate a commitment to uphold high ethical and professional standards in the practice of engineering.
- Can effectively function in a team environment and interact with people of diverse backgrounds.
- Understand the context in which their designs will be implemented and the corresponding impact of their activities on society.

Program Outcomes

To foster attainment of the educational objectives, the MEAM Department has developed a curriculum that insures students will achieve the following outcomes by the time of graduation:

- Graduates must have the ability to apply knowledge of mathematics and science to solve engineering problems.
- Graduates must have the ability to identify, formulate, and solve fundamental engineering problems.
- Graduates must have the ability to identify a suitable model for a physical system, and apply principles of mechanics, thermodynamics, fluid mechanics, and materials to obtain a solution that satisfies the constraints.
- Graduates must have the ability to design and conduct experiments as well as to analyze and interpret data.
- Graduates must have the 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.
- Graduates must be able to analyze a physical system, and create and validate models based on engineering and mathematical principles that correctly represent such systems and reflect current industry practices.
- Graduates must have the ability to use techniques, skills, and modern engineering tools necessary for engineering practice.
- Graduates must recognize the need for, and possess an ability to engage in, life-long learning.
- Graduates must have the ability to function on multidisciplinary teams.
- Graduates must have the ability to communicate effectively.
- Graduates must have an understanding of professional and ethical responsibility.
- Graduates must possess the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- Graduates must possess knowledge of contemporary issues.