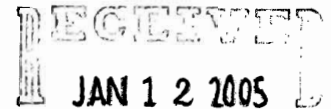


Mechanical and Nuclear Engineering

Student Learning Outcomes and 3-Year Assessment Plan



BY: _____

Overview

The Department of Mechanical and Nuclear Engineering (MNE) at Kansas State University offers a Bachelor of Science degree in Mechanical Engineering (BS ME). The Department maintains strengths in the areas of thermal fluid sciences, solid mechanics and materials, controls and nuclear engineering. In addition, students can more formally specialize in Nuclear Engineering through participation in the Nuclear Engineering Option program. This option consists of six junior-level and senior-level courses integrated into the four-year curriculum and include specialty courses in the areas of radiological assessment, shielding design, radiation measurement, and reactor analysis/operations. Students who successfully complete the Nuclear Engineering Option will receive a BS ME with the Nuclear Engineering Option noted on their transcript.

On March 4, 2004, the MNE Faculty approved a list of twelve Program Outcomes (designated as (a) to (l)) which is the terminology used by the Accreditation Board for Engineering and Technology (ABET). The term Program Outcomes will be used interchangeably with the Student Learning Outcomes (SLO) throughout this document. A strategy for measuring and assessing these outcomes has also been developed and implemented. The list of approved SLOs for the MNE Department, along with their relationship to the KSU SLOs, are provided on the following two pages.

The details of the 3-year SLO assessment plan that will be employed in the MNE Department are contained within this document. An overview of the assessment plan is summarized as follows:

- 1) Five of the approved twelve MNE SLOs were chosen as the basis of the initial 3-year assessment/evaluation.
- 2) The mechanism used for the evaluation of these outcomes includes multiple measures and involves all constituencies of our program, including the undergraduate students in the MNE Department at Kansas State University, the faculty in the MNE Department at Kansas State University, the alumni of the MNE Department at Kansas State University, and the employers and potential employers of graduates from the undergraduate program in Mechanical and Nuclear Engineering at Kansas State University.
- 3) The assessment data is collected systematically throughout the year. The Undergraduate Committee (UGC) is responsible for summarizing the data and presenting it to the faculty. It is also responsible for developing initiatives and making recommendations to the faculty groups to improve the program based on this data. The faculty is responsible for making small modifications to improve courses, making recommendations to the UGC, assisting in the collection of some data, and implementing approved initiatives.
- 4) Based on all assessment data, initiatives, and modifications the UGC annually documents progress and summarizes assessment data.
- 5) There is a mechanism within the annual assessment cycle to modify the relationship among courses/activities and program outcomes through a faculty vote. This is necessary due to occasional modifications to the curriculum and due to initiatives that may change these relationships.
- 6) The UGC is primarily responsible for executing the assessment and evaluation processes, although all departmental faculty are included in the activities.

Relationship to K-State Student Learning Outcomes

Program SLOs	University-wide SLOs (Undergraduate Programs)					Program SLO is conceptually different from university SLOs
	Knowledge	Critical Thinking	Communication	Diversity	Academic / Professional Integrity	
a. an ability to apply knowledge of mathematics (through multivariate calculus and differential equations, statistics, and linear algebra), science (including chemistry and calculus-based physics with depth in one), and engineering	X					
b. an ability to design and conduct experiments, as well as to analyze and interpret data	X	X				
c. an ability to design a system, component, or process to meet desired needs	X	X				
d. an ability to function on multi-disciplinary teams			X	X		
e. an ability to identify, formulate, and solve engineering problems	X	X				
f. an understanding of professional and ethical responsibility				X	X	
g. an ability to communicate effectively			X			
h. the broad education necessary to understand the impact of engineering solutions in a global and societal context		X		X	X	
i. a recognition of the need for, and an ability to engage in life-long learning	X				X	
j. a knowledge of contemporary issues	X			X		
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	X	X				
l. the ability to work at a professional level for both thermal and mechanical systems including the design and realization of such systems	X	X				