

# Mechanical Engineering

## B. S.

### *Expanded Statement of Institutional Purpose*

#### **Institutional Mission Reference**

The BS degree program in Mechanical Engineering offers a high quality degree program that meets national standards of excellence. It is a significant component of the University's commitment to science, engineering, and technology, particularly in fields of major importance to the region. The program provides the skills and knowledge unique to Mechanical Engineering that support the engineering profession in meeting the growing needs of the region and the nation. Simultaneously, the program comprises the general education components that yield a well-rounded graduate who is aware of societal needs and issues. The program faculty are committed to the highest quality of teaching and discovery of new knowledge.

#### **Institutional Goal(s) Supported**

The BS degree program in Mechanical Engineering supports the University goals of (a) quality undergraduate programs, (b) quality teaching, (c) application of engineering principles to serve the local community through applied research and development, and (d) life-long learning. The major strategic initiatives supported by the department are Strategic Initiative 1 (High-Quality, Distinctive Undergraduate Programs), Strategic Initiative 8 (Enhanced Quality of University Life), Strategic Initiative 9 (Inclusive and Supportive University Environment), and Strategic Initiative 10 (Strengthen and extend the existing relationships with community colleges, the U. S. Navy, and industry.)

### *Intended Educational (Student) Outcomes, Methods for Assessment, Criteria for Success, Assessment Results, and Use of Results*

#### **Intended Outcome 1**

Graduates of the Mechanical Engineering program will demonstrate that they have achieved a satisfactory mastery of the knowledge, techniques, skills, and modern tools of their discipline.

**Method for Assessing Outcome 1 and Criterion for Success:** 100% of graduates will earn at least satisfactory levels of performance on the technical portions of their senior project course(s) and 50% will earn good to excellent evaluations. Evaluations will be performed by a faculty team with industry representatives when appropriate.

**Summary of Assessment Data Collected for Outcome 1:** There were eleven (11) mechanical engineering students in the senior design course in the Fall 2001 semester. The performance of the students on the technical portion was evaluated by two professors. The performance of three students (27%) was rated "good to very good", the performance of 7 (64%) students was rated "very good to excellent", and the performance of one student (9%) was rated "excellent".

**Alternate Method for Assessing Outcome 1 and Criterion for Success:** On the basis of senior exit surveys/interviews, at least 75% of participating students will rate the overall program satisfactory to excellent.

**Use of Assessment Results from Intended Outcome 1 to Improve Academic Program:** The criterion of success has been met. Minor changes are expected in the future by encouraging more industry relationship.

**Intended Outcome 2**

Students will communicate effectively in writing.

**Method for Assessing Outcome 2 and Criterion for Success:** 100% of graduates will earn at least satisfactory levels of performance on the written portions of their senior project course(s) and 50% will earn good to excellent evaluations. Evaluations will be performed by a faculty team with industry representatives when appropriate. 100% of graduates will pass the Exit Writing Examination.

**Summary of Assessment Data Collected for Outcome 2:** Three students (27%) were rated "fair", 7 (64%) students were rated "very good" to "excellent", and one student (9%) was rated "excellent". All students who received their degrees passed the University Exit Writing Examination.

**Alternate Method for Assessing Outcome 2 and Criterion for Success:** By means of reports filled out by employers of students participating in co-operative education programs, writing skills of 80% of the students will be rated at least satisfactory and at least 50% of students will be rated good to excellent.

**Use of Assessment Results from Intended Outcome 2 to Improve Academic Program:** Three students rated fair failed to meet expectations on the writing portion of the senior project. In coming years, more emphasis will be placed on writing skills through writing intensive laboratory courses in the program. Students identified as requiring assistance in improvement of writing skills will be referred to the University Writing Center for further advice and action.

**Intended Outcome 3**

Students will give clear and effective oral presentations.

**Method for Assessing Outcome 3 and Criterion for Success:** 100% of graduates will earn at least satisfactory levels of performance on the oral presentations in their senior project course(s) and 50% will earn good to excellent evaluations. Evaluations will be performed by a faculty team with industry representatives when appropriate.

**Summary of Assessment Data Collected for Outcome 3:** There were eleven (11) mechanical engineering students in the senior design course in the Fall 2001 semester. The performance of the students on the oral presentation of the technical portion was evaluated by two professors. The performance of three students (27%) was rated "good to very good", the performance of seven students (64%) was rated "very good to excellent", and the performance of one student (9%) was rated "excellent".

**Alternate Method for Assessing Outcome 3 and Criterion for Success:** By means of reports filled out by employers of students participating in co-operative education programs, the speaking skills of 80% of the students will be rated at least satisfactory and those of at least 50% of students will be rated good to excellent.

**Use of Assessment Results from Intended Outcome 3 to Improve Academic Program:** The criterion of success has been met.

**Intended Outcome 4**

Graduates will demonstrate sound educational preparation and competence in their profession through successful career progress.

**Method for Assessing Outcome 4 and Criterion for Success:** By means of triennial surveys, 75% of graduates who respond will evaluate their career progress as at least comparable to and 25% will evaluate their career progress as higher or much higher than that of graduates of similar programs at other institutions.

**Summary of Assessment Data Collected for Outcome 4:** Alumni Surveys will be conducted during the Spring of 2002.

**Intended Outcome 5**

Employers will demonstrate that the educational preparation of graduates is substantial.

**Method for Assessing Outcome 5 and Criterion for Success:** By means of triennial surveys, 75% of supervisors who respond will evaluate the educational preparation of our graduates to be at least comparable to and 25% will evaluate the educational preparation to be somewhat or much higher than that of graduates of similar programs at other institutions.

**Summary of Assessment Data Collected for Outcome 5:** Triennial survey results are not available at this time.

**Alternate Method for Assessing Outcome 5 and Criterion for Success:** By means of surveys filled out by students and by employers of all students participating in the co-operative education program, at least 75% of employers will rank the student knowledge of subject matter related to the co-op satisfactory or better and 50% or more will give ratings of good to excellent.