

**MICHIGAN TECHNOLOGICAL UNIVERSITY
COLLEGE OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING -
ENGINEERING MECHANICS
STRATEGIC PLAN UPDATE
February 26, 2005
January 9, 2007**

Mission

Prepare Engineering Students for Successful Careers

Vision

Be a nationally recognized mechanical engineering department that attracts, rewards, and retains outstanding faculty, students, and staff

Vision metric: Be a Department of Choice Nationally

The Department of Mechanical Engineering-Engineering Mechanics will be nationally recognized as having one of the best undergraduate and graduate programs in the nation. Based on the quality and balance of its undergraduate and graduate programs and research it will be a department of choice by prospective students, parents, faculty, staff, corporate donors, and corporate employers nationwide.

Educational Objectives:

1. A graduate of the ME-EM Department should possess a solid foundation in and be able to apply the principles of basic science, mathematics and engineering science to the solution of problems.
2. A graduate of the ME-EM Department should be proficient in the use of modern techniques, procedures, and information bases available to mechanical engineers, and be able to use them to solve structured and unstructured problems in mechanical engineering.
3. A graduate of the ME-EM Department should demonstrate the ability to design and develop useful products, processes, or systems.
4. A graduate of the ME-EM Department should be able to work effectively in a changing engineering environment and be able to pursue his/her interests through life-long learning.

Goal 1. Increase the visibility of the department and its programs

Objective 1. Improve Rankings in National Research Council and U.S. News and World Report

Strategy 1. Promote department programs and accomplishments

Strategy 2. Increase the level of scholarship

Objective 2. Improve recognition for faculty, staff, students, and alumni

Strategy 1. Engage Honors and Awards Committee

Objective 3. Improve internet presence

Strategy 1. Continue to work with the webmaster to improve internet rankings.

Goal 2. Attract and retain high quality and diverse faculty, staff, and students.

- Objective 1. Reduce student to faculty ratio
 - Strategy 1. Reduce undergraduate enrollment through higher admission standards
- Objective 2. Make salaries competitive
 - Strategy 1. Benchmark salaries against other top twenty-five programs
- Objective 3. Continue to improve the quality of recruited faculty
 - Strategy 1. Aggressively pursue top quality faculty candidates
 - Strategy 2. Start up packages competitive with benchmark universities
 - Strategy 3. Secure named professorships for new untenured faculty
 - Strategy 4. Continue to provide mentoring for new faculty
- Objective 4. Improve diversity
 - Strategy 1. Insure diversity is a criterion during recruitment of faculty and students.
 - Strategy 2. Assess the environment for minority and female faculty and students.
 - Strategy 3. Work with administration on programs directed at increasing diversity
 - Strategy 4. Recruit minority and female students from the Summer Programs.
 - Strategy 5. Design marketing materials to attract minorities and female students.
- Objective 5. Continue to improve the quality of graduate students
 - Strategy 1. Seek resources to recruit quality domestic graduate students

Goal 3. Grow department resources.

- Objective 1. Increase department funding
 - Strategy 1. Execute Phase II of MEEM Building for the Future Campaign Endowing Excellence
 - Strategy 2. Expand alumni and friends interaction via full-time major gifts officer and chair trips
 - Strategy 3. Increase the number of Major Gifts Officers assigned to MEEM Campaign
- Objective 2. Increase space for research and education
 - Strategy 1. Lobby for a high-bay addition for high-technology labs and offices
 - Strategy 2. Lobby for the eleventh floor

Goal 4. Strengthen the department's educational programs

- Objective 1. Develop curricular innovations
 - Strategy 1. Seek funding from government and industrial agencies
- Objective 2. Infuse entrepreneurship into the undergraduate and graduate curricula
 - Strategy 1. Modify existing undergraduate courses at first year through senior year
 - Strategy 2. Introduce minors in entrepreneurship
- Objective 3. Pursue five-year program that culminates in an MS degree
 - Strategy 1. Develop five-year BS/MS
 - Strategy 2. Develop MS in Business Administration
- Objective 4. Produce leaders
 - Strategy 1. Increase participation in study abroad, co-op, and undergraduate research programs.
 - Strategy 2. Create research certificate/minor
 - Strategy 3. Initiate leadership forum/seminar series
 - Strategy 4. Institute outreach component in senior design
 - Strategy 5. Increase participation in student led publications.
 - Strategy 6. Introduce current events content into all senior technical elective courses.
- Objective 5. Provide professional development opportunities for graduate students.
 - Strategy 1. Increase participation at national/international conferences by providing matching travel funds.
 - Strategy 2. Provide more opportunities for students to present their research on campus.
 - Strategy 3. Provide opportunities for students to improve their writing

Goal 5. Achieve international leadership positions in all of the department's strategic research thrust areas

Objective 1. Secure National Centers

- Strategy 1. Secure one endowed faculty chair per each department strategic research area
- Strategy 2. Establish a research center at the national level in two of the department strategic research thrust areas (Engines, NVH, Manufacturing Processes, Composites/Nanomechanics)

Objective 2. Secure group funded activities

- Strategy 1. Continue to support travel to potential research sponsors
- Strategy 2. Utilize resource person to identify/match the right expertise of faculty to sponsor
- Strategy 3. Develop & identify funding opportunities and collaboration with other universities
- Strategy 4. Identify and utilize university resources for assistance in grant writing
- Strategy 5. Encourage collaborative research by, for example, reducing teaching load, increasing overhead return to investigators, providing cost share, increasing importance on P&T, increasing summer compensation ceiling
- Strategy 6. Increase lobbying at the state and national levels
- Strategy 8. Strengthen Linkages with Smart Zone, small company exposures

Objective 3. Develop relationships with research laboratories in other countries.

- Strategy 1. Initiate faculty/student exchanges with foreign labs.

Program targets

By 2005: (Enrollment: 1020 UG + 170 GS[85 PhD] = 1190) (43 Faculty)

By 2010: (Enrollment: 860 UG + 216 GS [108 PhD] = 1076) (43 Faculty)

Year	PhD Deg/Fac/yr	MS Deg/Fac/yr	UG Deg/Fac/yr	UG DL/Fac	Non Deg /Fac
2005	0.33	1.0	4.7	xx	xx
2010	0.42	1.3	4.7	xx	xx

POTENTIAL CHANGES/ADDITIONS TO PLAN BASED ON RETREAT:

Establish an ad hoc committee on Process Improvement that has the potential to address all six goals. This committee would work on various areas needing improvement across the department. A prioritized list of processes to be improved would be prepared and worked on in a timely manner. This committee would meet, elect a chair, facilitate the establishment of the prioritized list of processes to be improved, and establish a timetable to complete them.

Note: * by a strategy means that progress made or in progress

Peer Universities (3)

- Clarkson University
- Iowa State University
- University of Missouri - Rolla

Benchmark Departments

- University of Illinois
- University of Michigan
- University of Minnesota
- University of Wisconsin
- Penn State University
- Purdue University
- Rensselaer Polytechnic University