

**MICHIGAN TECHNOLOGICAL UNIVERSITY  
COLLEGE OF ENGINEERING  
DEPARTMENT OF MECHANICAL ENGINEERING -  
ENGINEERING MECHANICS  
STRATEGIC PLAN UPDATE  
February 26, 2005  
January 9, 2007  
December 19, 2007  
August 25, 2008  
June 1, 2010**

**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 internationally

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.

**Mechanical Engineering Program Educational Objectives:**

1. Graduates of the Mechanical Engineering Program will meet the expectations of employers.
2. The ME Program prepares qualified graduates to pursue advanced study, if desired.

**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 (Graduate and Undergraduate)

Strategy 1: Promote department programs and accomplishments through the Graduate seminar series, Annual Report, ASME ME Department Benchmarking study

Strategy 2: Host professional society conferences

Strategy 3: Faculty national/international visibility by having 80% of faculty on professional society committees or organizing national/international conferences/symposium meetings

Strategy 4: 25% of faculty as NSF panel reviewers and/or proposal reviewer:

Strategy 5: Average 3 journal papers per faculty member per year

Strategy 6: Increase the level of scholarship by having 3 journal publication per dissertation and 1 publication per thesis

Strategy 7: Assist with proposal writing

Strategy 8: Implement a department marketing plan

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

- Strategy 1: Engage Honors and Awards Committee (members – fellow, other national award winners)
- Strategy 2: Use the Drake Model for securing endowed professors/chairs
- Strategy 3: Provide quality recommendations for staff awards
- Strategy 4: Incentivize submission of fellowships/scholarships with internal funding per proposal (\$150), GRA, GA
- Strategy 5: GTA support of PhD students beyond the first year requires development of fellowship/scholarship proposal to federal or other agencies, such as, DoD, NASA, NSF
- Strategy 6: Solicit nominees from faculty and staff
- Strategy 7: Submit 4 PCA nominees per year
- Strategy 8: Submit one nominee to the University Award Selection committee per year
- Strategy 9: Nominate 6 Academy nominees every 2 years

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

Objective 1: Reduce student to faculty ratio

- Strategy 1: Increase number of tenure track faculty
- Strategy 2: Reduce undergraduate enrollment through higher admission standards
- Strategy 3: Combination of the above

Objective 2: Make faculty salaries competitive

- Strategy 1: Benchmark salaries against other top fifty programs

Objective 3: Attract and retain high quality staff

- Strategy 1: Make staff salaries competitive - benchmark staff salaries with those of peer universities
- Strategy 2: Provide professional development for staff
  - a. Work with HR to provide professional development for one staff member per year
  - b. Survey staff for development needs

Objective 4: 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, get the University to provide adequate support
- Strategy 3: Continue to secure named professorships for new untenured faculty
- Strategy 4: Review recruitment procedures
- Strategy 5: Provide continued professional development opportunities for faculty, e.g., release time., travel funds, etc
- Strategy 6: Secure 20% of the SHFI hires and suggest new focus areas for SHFI

Objective 5: Improve retention of faculty

- Strategy 1: Provide quality mentoring and regular feedback on progress

Objective 6: 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.
- Strategy 3: Recruit minority and female students from the Summer Programs
- Strategy 4: Design marketing materials to attract minorities and female graduate students.
- Strategy 5: Seek resources to recruit quality domestic graduate students

Objective 7: Continue to improve the quality of graduate students

Strategy 1: Require PhD GRE of all applicants or within the first semester for MTU students for NSF Graduate fellowships

### **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: Increase the number of major gift officers assigned to MEEM Campaign

Strategy 3: Expand alumni and friends interaction via full-time major gifts officer and chair trips

Strategy 4: Increase research overhead

Objective 2: Increase space for research and education

Strategy 1: Form a committee to prepare plans for the design of the new building

Strategy 2: Secure the 11<sup>th</sup> floor

### **Goal 4.** Strengthen the department's educational program

Objective 1: Develop curricular innovations

Strategy 1: Seek funding from government and industrial agencies

Strategy 2: Maintain department support of proposals

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: Honors program for undergraduates

Strategy 1: Honors section of all our required courses

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: Develop a Peace Corps ME Master International Program

Objective 5: Safety program

Strategy 1: Housekeeping – continual

Strategy 2: Safety audits of all labs on a 2 year cycle

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

Objective 1: Secure National Centers

Strategy 1: Secure 8 endowed faculty chairs/professorships

Strategy 2: Continue to create university centers/institutes in each of the Research Groups

Objective 2: Have a visible role in shaping national, large research concept development

Strategy 1: Identify matches between suitable research organization committees and existing faculty

Strategy 2: Help "matched faculty" pursue positions and participate (release time, travel, etc.)

Strategy 3: Hire a “research marketer/lobbyist” to help strategically position our faculty at the front-end of large RFP development activities

Program targets

By Fall 2012: (Enrollment: 1143 UG + 203 GS [100PhD] = 1346) (43 Faculty)\*  
By Fall 2017: (Enrollment: 1143 UG + 232 GS [129 PhD] = 1275) (43 Faculty)\*

\*Tenure – track and tenured faculty

Academic Year	PhD Deg/Fac/yr	MS Deg/Fac/yr	UG Deg/Fac/yr
2012-13	0.42	1.2	5.2-5.8
2017-18	0.58	1.2	5.3-5.8

### Peer Universities (3)

Clarkson University  
Iowa State University  
University of Missouri - Rolla

### Benchmark Departments

#### Graduate Programs

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

#### Undergraduate Programs

University of Michigan  
Michigan State University  
Purdue University  
University of Illinois  
Kettering University