

Essence & Identity

Mechanical Engineering at Kettering University adds value to society by preparing innovative leaders who create products and provide services that enhance the quality of people's lives.

Stakeholders

Stakeholders	Interests
Students	Career, diploma, job, salary, education (knowledge and skills), value
Faculty	Job security, professional development, knowledge transfer, service, money
Administration	Revenue, reputation, resource administration, accreditation
Board of Trustees	Reputation, institutional growth, alumni giving
Alumni	Reputation/prestige, heritage, networking/connectivity
Students' Families	Student success, career, value (return on investment)
Co-op employers	Value, student contributors, learners, team-players, future leaders
Graduate Employers	Innovative leaders, problem solvers
Society	Quality of life, economic development
Graduate Schools	Strong skills in math and engineering science
Accrediting Boards	Serve society, quality programs
Professional Societies	Serve society, quality educational programs, professional ethics

Scope & Boundaries

What We Are	What We Are Not
Undergraduate and Masters Level	PhD Program
Private university	State university
Multi-disciplinary	Single track program
Co-op based	Traditional 4 year academic program
Hands-on, experiential, applied	Primarily theoretical
Large	Small

Top Five Current Goals

- 1) 80% of Mechanical Engineering faculty will adapt and apply active learning techniques and pedagogy in the classroom within 3 years.
- 2) Develop a plan to allocate resources that will ensure students and faculty can be successful in the classroom.
- 3) Improve student satisfaction as indicated by EBI survey.
- 4) Develop and offer appropriate and timely on-line ME courses.
- 5) Allocation of a full time Mechanical Engineering faculty advisor to improve quality of student advising and program assessment
- 6) Develop sufficient University support and resources for increased student involvement in National design projects such as Engineers without Borders, SAE, ASME, AIAA, Etc.
- 7) Hire faculty with an increased applied research focus, who strengthen the specialty programs, ... and encourage faculty to include undergraduate and graduate students within federal grant proposals.
- 8) Launch a curriculum review to identify areas for improvement to ensure curricula is relevant, attractive and connected to the lives of the students and society.

- 9) The ME Department will implement successfully its ongoing program and curriculum assessment strategy (i.e. ABET assessment plan).
- 10) Mechanical Engineering faculty will participate in recruitment processes such as Discover Kettering, Prep for Success, LITE, AIM and Kamp Kettering.
- 11) The Mechanical Engineering Department will encourage the development and provide support for faculty, students, and campus clubs and groups that engage in projects of benefit to the global community.
- 12) Within 5 years every faculty member will be recognized as an expert in at least one specialty field by outside experts in that field

Top Five Products or Assets of the Current and Future Program

1. Faculty
2. Graduates/alumni
3. Co-op employer partners
4. Laboratories and CAE Tools
5. Mott Engineering & Science Building
6. Students
7. Heritage
8. Entrepreneurship and Economic Development Culture

Key Processes, Structures and Systems for Accomplishing Current and Future Goals

1. G8 Structure
2. Course Coordinators (drive course level assessment)
3. Faculty merit assessment & compensation tied to performance
4. CETL and Pacific Crest
5. [Need a Dean of Faculty and Curriculum Quality – Provost?]

Performance Criteria

1. Foundational
 - a.
2. Practitioner-based – perform every day practices with realistic expectations, but with a sense of urgency, to skillfully solve problems and achieve desired goals in an ethical manner
 - a. Important Aspects
 - i. Realistic
 - ii. Ethical
 - iii. Skillful
 - iv. Goal oriented / Task focused
 - v. Sense of urgency
 - vi. Problem solver
 - b. Attributes (measurable characteristics)
 - i. Number of faculty contracts and consulting jobs
 - ii. Number of faculty publications each year
 - iii. Number of PE's
 - iv. Number of students taking the FE Exam
 - v. Student theses

3. State-of-the-Art – seeking to be technological self-growers in the application of new tools, processes and technologies in dealing with daily challenges by pursuing continuous education and training and active participation in professional societies and meetings.
 - a. Important Aspects
 - i. Maintain currency in and understanding of technological advances
 - ii. Continuously develop skills in the use of technology
 - iii. Embraces change
 - iv. Participates in professional development
 - v. Conference and journal publications
 - b. Attributes (measurable characteristics)
 - i. Professional memberships (faculty)
 - ii. Participation in student sections of professional societies (SAE, ASME...)
 - iii. Publications and conference participation
 - iv. Technical savvy, use of sophisticated tools
 - v. Pursuit of education after Kettering
 - vi. CE courses
4. Innovative – Faculty and students see things in new ways by analyzing, simplifying and synthesizing to produce transformative ideas when others are constrained
 - a. Important Aspects
 - i. Creative
 - ii. Sees things in new ways
 - iii. Synthesizes
 - iv. Simplifies
 - v. Transforms
 - b. Attributes (measurable characteristics)
 - i. Invention disclosures, patent applications, patents awarded
 - ii. Research grants

5. Leadership

When providing needed leadership, the engineer promotes a shared vision to individuals, teams, and organizations and empowers them to achieve their individual and collective goals.

- a. Facilitates and articulates a shared vision valued by targeted individuals, groups, or organizations.
- b. Motivates others to action by crafting a compelling yet credible case for achieving individual and organizational goals.
- c. Provides authority and resources and removes barriers to others' success.
- d. Supports risk-taking and growth by creating trust, providing counsel, and by modeling desired attributes.
- e. Encourages achievement by recognizing and rewarding individual and group successes.

6. Communication

When exchanging information with others, the engineer prepares, delivers, and receives messages that achieve desired outcomes.

- a. Listens, observes, and questions to assess the audience background and information needs.
- b. Documents and mines available information and differing perspectives for understanding and application.
- c. Prepares a message with the content, organization, format, and quality fitting the audience and purpose.
- d. Delivers a message that achieves desired outcomes efficiently in a timely, credible, and engaging way.
- e. Assesses the communication process and responds in real time to improve its effectiveness.

7. Adaptable
8. Systems Thinking
9. Integrative
10. Collaborative

Student Focused

Program Focused

Research Focused

Community Focused

Faculty and Staff Focused

Improvement/change Focused

1. Innovative – Faculty and students see things in new ways by analyzing, simplifying and synthesizing to produce transformative ideas when others are constrained
 - a. Creative
 - b. Sees things in new ways
 - c. Synthesizes
 - d. Simplifies
 - e. Transforms
2. Adaptable
3. Systems Thinkers
4. Credential
5. Integrative
6. State-of-the-Art