New Lecturer Orientation
Undergraduate Education

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Scope - 2006

✓ 4978 undergraduates (25,555 at UM)
✓ 2578 graduate students (14,149 at UM)
✓ 1094 CoE undergraduate degrees granted (2006)
✓ 65,000 living engineering alumni
The Entering Cohort

- 1250 students in entering class
- HS median median GPA: 3.9
- Median Test Scores: ACT 30 - SAT 1380
- 75% of entering students graduate from CoE
- 25% women
- 8% under-represented minorities

Admission to the College

- Students enter the CoE without being in any department.
- 18 year old high school students are poorly positioned to pick a career
- The 1/3’s rule-of-thumb
- Leads to compromises in first year curriculum
CoE Undergraduate Degrees

- The CoE is one of 11 undergraduate degree granting units & one of 18 graduate units
- 14 BSE degrees
- 1 BS degree

Rackham
Architecture & Urban Planning
Art & Design
Business
Dentistry
Education
Engineering
Information
Kinesiology
Law

University of Michigan
College of Engineering

CoE Undergraduate Degrees

The CoE is one of 11 undergraduate degree granting units & one of 18 graduate units. The CoE offers 14 BSE degrees and 1 BS degree.
CoE Undergraduate Degrees

- Aerospace Engineering
- Earth System Science & Engineering
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science
- Computer Engineering
- Electrical Engineering
- Engineering Physics
- Industrial & Operations Engineering
- B.S. in Engineering
- Materials Science & Engineering
- Mechanical Engineering
- Naval Architecture & Marine Engineering
- Nuclear Engineering & Radiological Sciences

All are BSE degrees, except B.S. in Engineering

Curriculum

- Understand the technological and natural world
- Develop a facility to attack unfamiliar problems
- Challenge students (and let them challenge us)
- Create
- Communicate
- Lead

The University of Michigan seeks “an uncommon education for the common man”
James Burill Angell, U of M President, 1871-1909
CoE Curriculum: Major Components

✓ Admission to the College, not departments
✓ Engineering Core Courses
  ✓ First year engineering courses
  ✓ Math and science courses
  ✓ Humanities & Social Science
✓ Curricular Threads
✓ Department/degree curricula
✓ General Electives (Free electives)
✓ 128 credit hours
  ✓ Nominally 8 terms of 16 credits each

First Year Engineering

✓ Engineering 100 (required)
  Introduction to Engineering
✓ Engineering 101 (required)
  Introduction to Computers and Programming
✓ Engineering 110 (optional)
  The Engineering Profession
Core

- Calculus, Differential Equations
  Math 115, 116, 215, 216 (or 214)
- Chemistry
  Chem 130/125/126 or 210/211
- Physics
  Phys 140/141, 240/241
- Humanities & Social Sciences
  16 credit hours, including a sequence

Curricular Threads

- Communications Across the Curriculum
- Professional Ethics
- Teamwork
- Foundation in the first year
- Carried forward in departmental courses
Humanities & Social Sciences

- 16 credits in College of Literature, Arts & Science
- At least 6 in humanities
- Sequence including one upper division course

Department Curriculum

- Sophomore foundations
- Technical core
- Technical electives
- General electives (free electives)
- Capstone Design Project
  - Includes realistic constraints, economics, societal impact, regulation, manufacturing…
Selection of Major

- Students may declare a program after 1 term
- Must be in good standing (2.0 gpa)
- Must have 2.0 gpa in Engineering Core courses (Biomed 3.2, Eng Phys 2.8)
- Must have completed or be in last set of first year courses
- Student goes to department and declares

International Programs

- International Programs in Engineering (IPE)
- Dr. Amy Conger, Director
- Exchanges, Partnerships, Internships
- Engineering Global Leadership Honors Program - EGL (BSE/MSE program)
- Program in Global Engineering
  - Might transition to a Minor this year
- SJTU Joint Institute
- International Program Committee
Undergraduate Research

- UROP
- Informal & formal departmental programs
- Independent study courses
- For pay vs. for credit
- Funding
  - Departmental resources
  - UROP
  - NSF REU supplement funds
  - NASA Public/Outreach funds

Wilson Student Team Project Center

- Peter Washabaugh, Assoc. Prof. Aero, Director
- 10,000 sq. ft facility to support project teams
- Now transitioning to support other student multidisciplinary design activities
- Expanding space and facilities
- Supporting department facilities
SGUS

- Masters degree is the place for specialization within a discipline
- Sequential Graduate Undergraduate Study
  - 9 credits double counted
  - Apply in Junior year
  - GPA thresholds apply

FERPA

- Family Educational Rights and Privacy Act (Buckley Amendment)
- Student records may not be released to:
  - Parents (it does not matter who pays the bill)
  - Friends
  - Spouses, girl- or boyfriend, family dog, etc.
- There are exceptions
  - Students can give permission in writing
  - Requests for information must be kept
Learning & Teaching

- Student learning is important
- Ideally curriculum is designed around what students need to learn
- Classes & learning experiences designed around what students can do when they are done
- Teaching should be done intentionally

Support for Teaching Support for Learning

- Ctools
- GSIs - assignment and process
  - GEO - Graduate Employee Organization
- Science Learning Lab
- Math Lab
- Engineering Learning Resource Center
- Society tutoring services
- ASEE - Dean’s Program
- CRLT / CRLT North
What do Grades Mean?

**Undergrad Scale**
- **4.0 Scale**

**Graduate Scale**
- **9.0 Scale**

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Curricular Initiatives this year

- International Minor
- Multidisciplinary Design Minor
- Entrepreneurship Program
- Communication Across the Curriculum Review
- First Year Computing Review
- Curricular Flexibility