

New Lecturer Orientation Undergraduate Education

James Paul Holloway

Arthur F. Thurnau Professor
Associate Dean for Undergraduate Education
Professor of Nuclear Engineering &
Radiological Sciences

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

MichiganEngineering University of Michigan College of Engineering

Search

About Research Admissions Education Support the College

College Bulletin

Home / Students / College Bulletin / Welcome

College Bulletin

Welcome Contact Us

College of Engineering Bulletin

The online Bulletin reflects the most up-to-date information available and is updated as changes are made to the curriculum. To view past versions of the College Bulletin in Adobe Acrobat format, please visit our archives. Note: Archived bulletins are only applicable to that academic year's course requirements. Please visit your advisor for more information, or if you have questions regarding this.

Michigan Engineering

For students excited about the potential of technology, there's no better place to learn and explore than the University of Michigan College of Engineering. Michigan Engineering offers a rare combination of high-quality engineering scholarship, a broad scope of college and university opportunities, and large-scale impact.

Michigan Engineers-at the graduate and undergraduate levels-learn how to apply the latest developments in technological thinking to the world's major problems. Students learn about and participate in pioneering research in a variety of disciplines, including nanotechnology and integrated microsystems, cellular and molecular biotechnology, and information technology. With 11 departments, interdisciplinary and international programs, ten student team projects and nearly 60 liberal arts minors to choose from, the College offers future engineers an unparalleled range of opportunities. As a result, students leave Michigan prepared for leadership roles in traditional engineering functions as well as in business, medicine, law and teaching.

The College's faculty is composed of scholars who are among the best in their fields, including 51 National Science Foundation Career Award recipients and 22 current or emeritus faculty members of the National Academy of Engineering. Faculty research possibilities are expanded by the University's 19 schools, colleges and divisions. Interdisciplinary research is a hallmark of Michigan Engineering, particularly between the College and the schools of Medicine, Business, and Information. (Michigan is one of only two universities in the nation with top-ranked engineering, medical and business schools.) This research and other research within the College make a practical difference in society. The College's Technology Transfer Office works closely with faculty to put research into the hands of people.

CoE Undergraduate Degrees

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

Literature, Science, and the Arts
 Architecture & Urban Planning
 Art & Design
 Business
 Education
 Engineering
 Kinesiology
 Music
 Natural Resources & Environment
 Nursing
 Pharmacy

Rackham
 Architecture & Urban Planning
 Art & Design
 Business
 Dentistry
 Education
 Engineering
 Information
 Kinesiology
 Law
 Medicine
 Music
 Natural Resources & Environment
 Nursing
 Pharmacy
 Public Health
 Public Policy
 Social Work

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

Letter Grades		Honor Points
A+		4.0
A	excellent	4.0
A-		3.7
B+		3.3
B	good	3.0
B-		2.7
C+		2.3
C	satisfactory	2.0
C-		1.7
D+		1.3
D		1.0
D-		0.7
E	not passed	0.0
ED	unofficial drop	0.0

Curricular Initiatives this year

- ✓ International Minor
- ✓ Multidisciplinary Design Minor
- ✓ Entrepreneurship Program

- ✓ Communication Across the Curriculum Review
- ✓ First Year Computing Review
- ✓ Curricular Flexibility