MichiganEngineering





2007-08

PROFILE

University of Michigan College of Engineering







November 2007

Dear Friends:

With a distinctive combination of premier scholars, international reach and multidisciplinary achievement, the University of Michigan College of Engineering is a global leader in engineering education and research. The College is flourishing, with current highlights that include:

- renovation and expansion of the Michigan Nanofabrication Facility, a premier laboratory space of its kind;
- establishment of the Center for Entrepreneurship, a new venture designed to empower student entrepreneurs;
- creation of the Michigan Memorial Phoenix Energy Institute, a new University-wide energy initiative that will enable the College, corporate partners and local governments to lead the nation in developing alternative energy sources;
- continuing development of our international and multidisciplinary programs; and
- resource growth, as a result of the $300-million *Progress & Promise: 150th Anniversary Campaign*, which stands at 82% completion as of this writing.

Whether you are a prospective faculty member or student, a representative of one of our many partner organizations, or a graduate or friend of the College, I encourage you to read this Profile and visit our website at www.engin.umich.edu to learn more about the many great opportunities Michigan Engineering has to offer. If you still have questions, please contact any person listed in the directory in the back of this publication.

Sincerely,



David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
Professor of Electrical Engineering and Computer Science







Michigan Engineering Highlights

For anyone 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: high-quality scholarship, large-scale impact and a broad scope of teaching, research and service opportunities.

Breakthrough Scholarship – Ten CoE students from the Student Space Systems Fabrication Laboratory made history at the 2006 Space Elevator Games in New Mexico, when their climber became the first to successfully reach the top of the 200-foot space elevator ribbon and descend by itself.
http://www.engin.umich.edu/alumni/engineer/07S/students/index.html#6

Large-scale Impact – Two Michigan Engineering faculty members and two students were among eight U-M researchers who contributed to the series of reports issued by a United Nations-sponsored panel that shared the 2007 Nobel Peace Prize with former Vice President Al Gore.
http://www.umich.edu/~urecord/0708/Oct08_07/16.shtml

Service Opportunities – *Wee Wizards Explore Making Things - How Manufacturing Works and Why It Is Important*, a coloring book created by two CoE staff members, introduces kids to engineering and manufacturing. The Society of Manufacturing Engineers funded the initial printing of 10,000 copies and its distribution to Michigan middle-school technology teachers.
http://www.engin.umich.edu/alumni/engineer/06F/bytes/index.html#8





Academic Opportunities

Michigan Engineering's reputation for excellence attracts talented engineering students from across the country and around the world. Graduate and undergraduate students reach their full potential by selecting customized plans of study from a range of academic options, including:

- PhD, Master's, and Bachelor's degree programs in a broad range of disciplines
- 11 engineering departments, 60+ engineering fields of study, nearly 80 liberal arts minors
- Unique international exchange opportunities
- Flexible interdisciplinary degree programs
- Five-year Sequential Graduate and Undergraduate Studies programs

The College is also a leading provider of various distance-learning and in-person continuing-education programs for corporations, with programs available in nine different languages and students in 37 countries.













Student Profile

Degrees Granted in Academic Year 2007

	Bachelor's	Master's	Doctoral
Degrees Granted	1,121	769	256
% Women	24%	24%	22%
% URM*	9%	10%	11%

Student Enrollment - Fall 2007

	Bachelor's	Master's	Doctoral
Students Enrolled	5,120	1,243	1,289
% Women	23%	20%	20%
% URM*	9%	9%	14%

*URM = Underrepresented Minorities, which includes Black, Hispanic and Native American. % based on ethnicity of domestic students only.

Entering Student Characteristics - Fall 2007

Undergraduate

Total Freshman Applications	4,475
% Offered Admission	65%
Median HS GPA for Admitted Freshmen	3.9
Median ACT for Admitted Freshmen	30
Median SAT for Admitted Freshmen	1390
Graduation Rate After 6 Years	77%

Graduate

Total Entering Student Applications	4,959
% Offered Admission	36%
Mean GRE Quantitative for Entering Students	770
Mean GRE Writing for Entering Students	4.24
Mean GRE Verbal for Entering Students	533



Student Teams

Applying classroom knowledge to real-world projects is a vital component of the Michigan Engineering experience and our range of student teams provides the perfect opportunity.

Examples of Student Team Projects

- Aero Design/M-Fly
- Challenge X (crossover vehicle)
- Chemical Car
- Concrete Canoe
- Formula SAE M Racing
- Human-Powered Helicopter
- Human-Powered Submarine
- Mars Rover
- Mini-Baja Car
- Solar Car
- Steel Bridge
- Student Space Systems Fabrication Lab

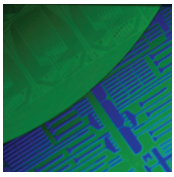
Wilson Student Team Project Center

Student teams have everything they need to launch dreams inside the 10,000 square-foot Wilson Student Team Project Center – space for design, assembly, machining, electronics, composite lay-up and painting, all in a single facility.





Research Highlights



The University of Michigan is one of the nation's leading research universities. Its $800-million research portfolio has doubled over the past decade. Michigan Engineering is home to a National Science Foundation Engineering Research Center and plays a leading role in the Michigan Memorial Phoenix Energy Institute and the Graham Environmental Sustainability Institute.



The University emphasizes technology transfer to put technology into the hands of the public. U-M ranks fourth in start-ups and is among the top ten in licenses, licensing revenue and industry-funded research.* The College of Engineering produces nearly half of the University's invention disclosures.

*Association of University Technology Managers, 2004

FY 2007	University	Engineering
Total Research Expenditures	$823 M	$133 M
Patent Applications	144	71
Start-ups Launched	7	5
Technologies Transferred to Industry		
License Agreements	91	25
Invention Disclosures in Agreements	179	40



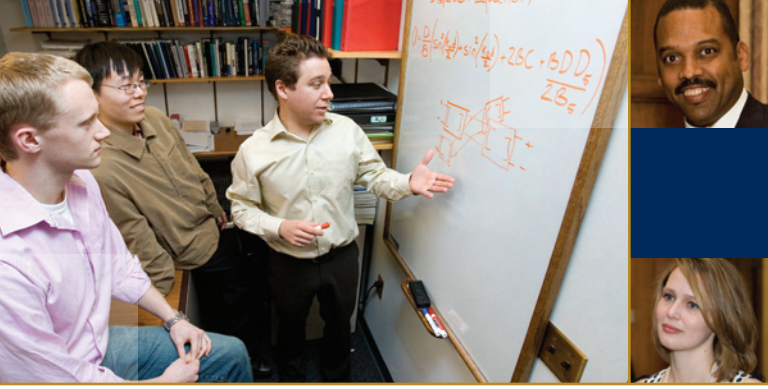


Recent Research Innovations

Strong as Steel, But Plastic – By mimicking a brick-and-mortar molecular structure found in seashells, Michigan Engineering researchers created a composite plastic that's as strong as steel but lighter and transparent. Further development could lead to lighter, stronger armor and other applications in microelectromechanical devices, microfluidics, biomedical sensors and valves and unmanned aircraft.
http://www.ns.umich.edu/htdocs/releases/story.php?id=6084

Running Backwards to Make Progress – Using today's standard ship-design, computer-modeling programs, a scientist inputs a series of environmental conditions and the computer predicts how the boat is likely to perform under these conditions. Michigan Engineering researchers have developed a new faster method that works in reverse. A scientist enters a particular ship response, perhaps the worst-case scenario, and the computer provides a list of water conditions that could create such a response. This new method is meant to be used in the early stages of ship design to rule out problematic architectures. And it is expected to help spur innovation.
http://www.ns.umich.edu/htdocs/releases/story.php?id=6076

Skin for Bridges – A new "skin" for bridges, buildings and airplanes could be a sixth sense for inspectors looking for cracks and corrosion that could lead to a catastrophic failure like the Minneapolis bridge collapse. Michigan Engineering researchers developed a coating that could be painted or sprayed on structures to sense their stability over time. It would allow inspectors to check for damage without physically examining a structure.
http://www.ns.umich.edu/htdocs/releases/story.php?id=5979



Faculty Profile

Michigan Engineering's teaching faculty is among the best in the country. Constantly on the lookout for people who can bring new depth to the institution, the College seeks out dynamic individuals who can be stars in both the laboratory and the classroom.

Academic Year 2007 Faculty	
Full Professors	191
Associate Professors	75
Assistant Professors	62
Instructors	0
Total Tenured and Tenure-Track Faculty	**328**
Research Professors	7
Associate Research Professors	1
Assistant Research Professors	0
Research Scientists	13
Associate Research Scientists	16
Assistant Research Scientists	32
Research Investigators	5
Total Research Faculty	**74**
Endowed and Named Professorships	57
National Academy of Engineering Members	21*
National Academy of Sciences Members	1
National Medal of Science Recipients	2
National Medal of Technology Recipients	1
PECASE Recipients	4
National Science Foundation Career Award Recipients	60

*Includes emeritus faculty





Rankings

Nearly all the University of Michigan's 19 schools, colleges and divisions rank among the top in their fields – nationally and internationally. The University is one of only three public institutions consistently ranked in the nation's top 25 universities, and one of only two universities, public or private, with top-ranked engineering, business and medical schools. The College of Engineering has leveraged this amazing scope to drive innovation and change.

College of Engineering Rankings by Department

According to *U.S. News & World Report*, 2007

	Graduate	Undergraduate
Aerospace Engineering	4	3
Biomedical Engineering	10	9
Chemical Engineering	12	11
Civil Engineering	7	7
Computer Engineering	6	7
Electrical Engineering	6	5
Environmental Engineering	6	3*
Engineering Physics	N/A	5*
Industrial and Operations Engineering	2	2
Materials Science and Engineering	9	3
Mechanical Engineering	5	4
Nuclear Engineering and Radiological Sciences	2	N/A

Note: U.S. News does not rate Atmospheric, Oceanic and Space Sciences or Naval Architecture and Marine Engineering

*Area of concentration





Student and Faculty Service

The College encourages well-rounded personal growth and service to society. Students and faculty are encouraged to participate in personal-development, leadership and outreach opportunities. Current examples of these opportunities include:

Malawi Orphan Care Center – BLUE Lab (Better Living Using Engineering) is collaborating with a local teacher to design orphan care centers in Malawi, Africa, that use sustainability principles and encourage youth entrepreneurship.
http://www.engin.umich.edu/soc/BLUElab/projects/index.html

Building Bridges – Educational outreach to Bates Elementary School, located in Dexter, Michigan, shows children in a fun way how engineers use math and science to benefit society.
http://cee.engin.umich.edu/pdfFiles/WI%2005%20Newsletter.pdf

U-M Flint Partnership – The College of Engineering and UM-Flint College of Arts and Sciences (CAS) formed a partnership to foster success among promising students and increase the number of science, technology, engineering and math degrees granted by both institutions to non-traditional students.
http://www.engin.umich.edu/news/transferadmissions/

Ethics Study – The College is part of a multi-institutional team undertaking a four-year study of ethics education for engineering undergraduate students. The study unites Michigan Engineering, Lawrence Technological University, California Polytechnic State University-San Luis Obispo and specialists in ethical development. The coalition is assessing curricular and extracurricular activities that relate to ethics to determine how to improve the ethical decision-making capabilities of engineering undergraduates.
http://www.engin.umich.edu/news/e3ethics/



Careers for Michigan Engineering Graduates

Careers for Michigan Engineering graduates are as diverse as their interests. Michigan Engineers have become…

Entrepreneurs	Military Leaders
Lawmakers	Astronauts
Artists	CEOs
Emmy® Award Winners	Professors
Meteorologists	Investors

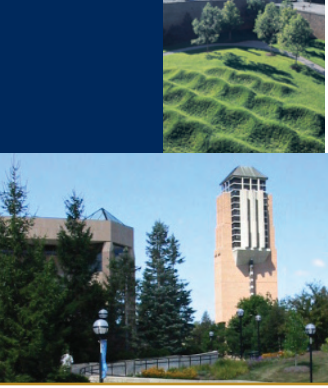
Top Organizations Hiring Michigan Engineers*

- Advanced Micro Devices
- Bank of America
- The Boeing Company
- Capital One
- Dow Corning Corporation
- Ford Motor Company
- General Electric Company
- General Motors Corporation
- Intel Corporation
- Lockheed Martin
- Microsoft Corporation
- Raytheon Company

*2005-2006

Alumni Network

As the oldest public engineering school in the U.S. (by first degree awarded), Michigan Engineering boasts more than 60,000 living alumni. These accomplished individuals maintain contact with the College and connect with each other through *Michigan Engineer* magazine, *Michigan E-News* electronic newsletter and the College's website (www.engin.umich.edu). Each year, hundreds of Michigan Engineers actively serve on the College's boards and committees. Prominent alumni include Larry Page (Google co-founder), Tony Fadell (Apple iPod Division Senior Vice President) and Chuck Vest (retired MIT president).

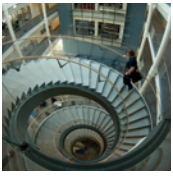




Facilities

The College of Engineering shares the 850-acre bucolic and vibrant North Campus with a mix of other academic disciplines: the A. Alfred Taubman College of Architecture and Urban Planning; the School of Music, Theatre & Dance; the School of Art & Design; and the School of Information. The 255,000 square-foot Duderstadt Center, at the center of North Campus and open around the clock, offers multimedia resources and comfortable spaces to facilitate educational and social collaborations across academic boundaries.





The College's 23 buildings include three new structures: the Ann and Robert H. Lurie Biomedical Engineering Building, the Computer Science and Engineering Building and the Michigan Nanofabrication Facility.

The Computer Aided Engineering Network (CAEN) offers the College of Engineering community dedicated comprehensive computing and networking technologies to meet all needs.



With an environment as stimulating as its classrooms and labs, the College enjoys a bounty of visual treasures. Private gifts of modern art created by Alice Aycock, Fletcher Benton,

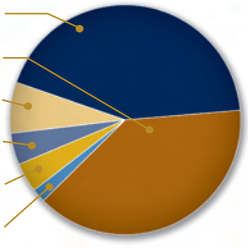


Helen Frankenthaler, Maya Lin, Clement Meadmore and Robert Motherwell enhance the College's public spaces, while the 165-foot Ann and Robert H. Lurie Tower provides the College's architectural focal point.

Financial Information

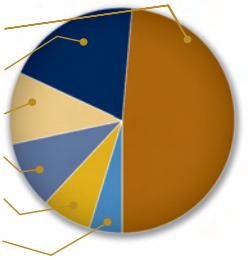
College of Engineering Projected Revenues - FY08

Tuition & Fees	
$134.0 M	43.3%
Grants & Contracts	
$120.7 M	39%
University Funds	
$22.1 M	7.1%
Investment & Endowment Income	
$13.9 M	4.5%
Other	
$13.1 M	4.2%
Expendable Gifts	
$5.5 M	1.8%
Totals	
$309.4 M	100%



College of Engineering Projected Uses - FY08

Faculty & Staff Compensation	
$151.3 M	48.9%
Student Aid	
$59.9 M	19.4%
Equipment, Supplies & Services	
$31.5 M	10.2%
University Attributed Assessments	
$30.0 M	9.7%
Other	
$22.4 M	7.3%
Facilities Operations	
$14.2 M	4.6%
Totals	
$309.4 M	100%



Gifts to the College

Gifts to the College of Engineering – FY07	
Living Individuals	$14,239,264
Trusts & Bequests	$3,511,573
Corporations	$7,186,678
Professional Foundations	$2,326,387
Associations/Others	$226,250
Total	**$27,490,152**

Endowment	
Market Value 9/30/07	$354,996,222 M

Progress & Promise: 150th Anniversary Campaign

In May 2004, the College of Engineering publicly launched the *Progress & Promise: 150th Anniversary Campaign*. A major component of the University's The *Michigan Difference* effort, the College's campaign goal is to raise $300 million through 2008. These resources will fund scholarships, professorships, facilities and key research thrusts and programs.

College of Engineering Contacts **(734) 647-7000**

www.engin.umich.edu

Office of the Dean ..... (734) 647-7010
David C. Munson, Jr. (munson@umich.edu)

Academic Affairs..... (734) 647-7020
A.W. (Tony) England, Associate Dean (england@umich.edu)

Research and Graduate Education ..... (734) 647-7030
S. Jack Hu, Associate Dean (jackhu@umich.edu)

Undergraduate Education..... (734) 647-7150
James P. Holloway, Associate Dean (hagar@umich.edu)

Student Affairs..... (734) 647-7118
Jeanne Murabito, Executive Director (murabito@umich.edu)

Resource Planning and Management ..... (734) 647-7060
Virginia Wait, Executive Director (vwait@umich.edu)

College Relations..... (734) 647-7037
Brad Canale, Executive Director (bcanale@umich.edu)

Information Technology..... (734) 936-3566
Paul Killey, Executive Director (paul@umich.edu)

Communications and Marketing ..... (734) 647-7085
Byron K. Roberts, Senior Director (byronr@umich.edu)

Corporate and Government Relations..... (734) 647-7057
Daryl C. Weinert, Senior Director (weinert@umich.edu)

Technology Transfer and Commercialization..... (734) 647-7080
Daniel F. Broderick, Director (danbrod@umich.edu)

Interdisciplinary Professional Programs ..... (734) 763-0480
Huei Peng, Executive Director (hpeng@umich.edu)

Engineering Career Resource Center ..... (734) 647-7160
Cynthia M. Redwine, Director (redwine@umich.edu)

Recruitment and Admissions ..... (734) 647-7101
Sharon Burch, Director (sharbu@umich.edu)

Multicultural Engineering Programs Office ..... (734) 647-7121
Derrick Scott, Director (descott@umich.edu)

Women In Science and Engineering..... (734) 647-7012
Cinda-Sue Davis, Program Director (csdavis@umich.edu)

International Programs Office..... (734) 647-7026
Amy Conger, Program Director (aconger@umich.edu)

Entrepreneurship Programs ..... (734) 647-6835
Thomas Zurbuchen, Director (thomasz@umich.edu)

UNIVERSITY OF MICHIGAN

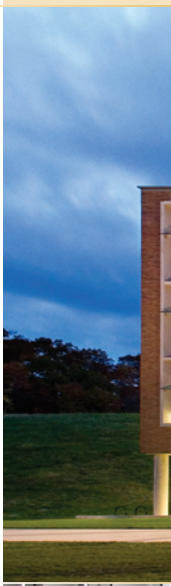
College of Engineering

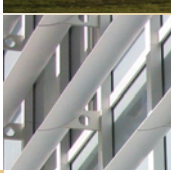
Office of College Relations
1221 Beal Avenue
Ann Arbor, Michigan 48109-2102

(734) 647-7085
(734) 936-1661 fax
www.engin.umich.edu

The Regents of the University of Michigan

Julie Donovan Darlow, Ann Arbor
Laurence B. Deitch, Bingham Farms
Olivia P. Maynard, Goodrich
Rebecca McGowan, Ann Arbor
Andrea Fischer Newman, Ann Arbor
Andrew C. Richner, Grosse Pointe Park
S. Martin Taylor, Grosse Pointe Farms
Katherine E. White, Ann Arbor
Mary Sue Coleman, *ex officio*





The University of Michigan, as an equal opportunity/affirmative action employer, complies with all applicable federal and state laws regarding nondiscrimination and affirmative action, including Title IX of the Education Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973. The University of Michigan is committed to a policy of nondiscrimination and equal opportunity for all persons regardless of race, sex, color, religion, creed, national origin or ancestry, age, marital status, sexual orientation, gender identity, gender expression, disability, or Vietnam-era veteran status in employment, educational programs and activities, and admissions. Inquiries or complaints may be addressed to the Senior Director for Institutional Equity and Title IX/Section 504 Coordinator, Office of Institutional Equity, 2072 Administrative Services Building, Ann Arbor, Michigan 48109-1432, 734-763-0235, TTY 734-647-1388. For other University of Michigan information call 734-764-1817.