ABET Institution Overview

Richard Roush, Dean, College of Agricultural Sciences
William Easterling, Dean, College of Earth and Mineral Sciences
Amr Elnashai, Dean, College of Engineering
Agenda

• Vision and Mission
• Strategic Priorities
• Investments in the Future of our Students
• Faculty and Staff Expansion
• Research
• Our Programs
• About Our Students
Vision and Mission
Penn State is a **multi-campus public research university** that educates students from Pennsylvania, the nation and the world, and improves the well-being and health of individuals and communities through integrated programs of teaching, research, and service.
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Strategic Goals

IMPROVING ACCESS

INCREASING ENGAGEMENT

BUILDING GLOBAL, ENTREPRENEURSHIP AND LEADERSHIP SKILLS
Strategic Priorities
Strategic Planning: Penn State
Strategic Planning: Engineering

World-class engineering through learning, discovery and engagement
Primary Goals (for Undergraduate Education)

• Leadership and entrepreneurial training
• Broader, societal challenges-based curriculum
• Global awareness, cultural sensitivity
• Presentation and communication skills
• Project-based and service learning
• More online degree programs
• Access to an education driven by learner needs
Strategic Initiatives (for Undergraduate Education)

- Strengthen and enhance infrastructure
- Integrate engineering, ethics, leadership, global, and entrepreneurship curricula and experiences
- Fuse online and resident education courses for flexibility and opportunity
- Develop scholarship program with international experiences, internships and couple classroom material with real applications
- Create new technology-enabled active-learning classrooms and laboratories

World-class engineering through learning, discovery and engagement
Investments in the Future of our Students
Distinguished Teaching Fellowships

- 16 Applications
- 7 Funded
- Total Funding: $125,000

Undergraduate Research Initiative

- 160 Applications
- 79 Funded
- Total Funding This Year: $430,000
Global Engineering Leadership Program

7 Funded

Total Funding: $140,000

15 Received
Innovation Grants
46 Received 6 Funded
Total Funding: $305,000

Equipment Grants
18 Received 12 Funded
Total Funding: $1.4M
Facility Expansion and Upgrade

- Chemical and Bio Engineering Building (opening 2018, 188,000 sq. ft., largest project in capital plan) $150M
- New Student Collaboratory (120,000 sq. ft.) $100M
- Baker Hughes Production Engineering Laboratory (1131 sq. ft.) $500k
- Drilling Mud and Cement Laboratory (857 sq. ft.) and Reservoir Rock and Fluid Properties Laboratory (892 sq. ft.) $870k
- Steidle retrofit (2016, 110,000 sq. ft.) $52M
- Agricultural and Biological Engineering Building (opening 2018, 85,000 sq. ft.) $44M
Facility Expansion and Upgrade

- 7 new/renovated buildings
- 506k square feet of space
- $347M investment
Faculty and Staff Expansion
World-class engineering through learning, discovery and engagement

6 new Frontier faculty positions this academic year

$4M Investment

World-class engineering through learning, discovery and engagement
$10M
Investment

12 faculty positions from the Colleges of Engineering and Earth and Mineral Sciences to expand the Institute for Natural Gas Research (INGaR)
12
New biomedical engineering faculty members, more than doubling the department

$10M
Investment
10
New faculty positions in mechanical and nuclear engineering

25%
Expansion

$6M
Investment
NEW faculty positions in the next three years in the College of Engineering

Overall increase in Engineering faculty in all departments ... more to come

World-class engineering through learning, discovery and engagement
Key Staff Expansion

4 Additional academic advisers for Colleges of Engineering and Earth and Mineral Sciences

Appointment of a new Safety Officer in the College of Engineering

Appointment of new Associate Dean for Research and Innovation in the College of Engineering
Research
PSU-Sponsored Research

Total $848,215,000

- Federal: $537,298,000
- University: $140,811,000
- Industry and Other: $101,035,000
- Commonwealth of Pennsylvania: $69,071,000
Engineering Research Expenditures 2013-14

Source: Annual Report of Research Activity, Office of the Vice President for Research, Fiscal Year 2013

Total $321,766,000

- Engineering $145,063,000
- Agricultural Sciences $111,733,000
- Earth and Mineral Sciences $64,970,000

World-class engineering through learning, discovery and engagement
The Valuable Role of Research

Penn State faculty connected to industry

Expands number of graduate level classes taken by undergraduates

Faculty stay abreast of progress in science and technology

Research opportunities for undergraduates
Our Programs
## Engineering Programs

<table>
<thead>
<tr>
<th>Aerospace Engineering</th>
<th>Computer Science and Engineering</th>
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<tbody>
<tr>
<td>Biological Engineering</td>
<td>Electrical Engineering</td>
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<td>Architectural Engineering</td>
<td>Engineering Science and Mechanics</td>
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<td>Biomedical Engineering</td>
<td>Industrial and Manufacturing Engineering</td>
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<td>Chemical Engineering</td>
<td>Mechanical and Nuclear Engineering</td>
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<td>Civil and Environmental Engineering</td>
<td>General Engineering</td>
</tr>
<tr>
<td>Energy Engineering</td>
<td>Environmental Systems</td>
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<tr>
<td>Materials Science and Engineering</td>
<td>Petroleum and Natural Gas</td>
</tr>
<tr>
<td>Mining Engineering</td>
<td>Future Programs in CES/EE Space</td>
</tr>
</tbody>
</table>
Engineering Program Rankings

- **TOP 10**
  - Industrial Materials Science and Engineering
  - Petroleum and Natural Gas

- **18th**
  - Undergraduate

- **25th**
  - Graduate

- **8th**
  - # of Research Grants

- **11th**
  - Citations/awards among all engineering programs in the USA

- **4th**
  - Faculty with a published research article

Source: U.S. News and World Report/Academic Analytics
About Our Students
University-wide Enrollments

- 2009: 94,301
- 2010: 95,833
- 2011: 96,519
- 2012: 96,562
- 2013: 98,097

1st Generation Students

- University Park: 21%
- Campuses: 39%
- All University: 30%
University-wide Enrollments

Minority Undergraduate Enrollment

International Student Enrollment
# Engineering Enrollments

**EMS**

<table>
<thead>
<tr>
<th>EMS</th>
<th>2009</th>
<th>2010</th>
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<th>2012</th>
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<td>467</td>
<td>594</td>
<td>736</td>
<td>927</td>
<td>1084</td>
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<tr>
<td>Underrepresented</td>
<td>9%</td>
<td>10%</td>
<td>11%</td>
<td>12%</td>
<td>13%</td>
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<tr>
<td>International</td>
<td>7%</td>
<td>9%</td>
<td>10%</td>
<td>13%</td>
<td>14%</td>
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World-class engineering through learning, discovery and engagement
Engineering Enrollments

CoE

<table>
<thead>
<tr>
<th>CoE</th>
<th>2009</th>
<th>2010</th>
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<tbody>
<tr>
<td>Female</td>
<td>16%</td>
<td>16%</td>
<td>17%</td>
<td>18%</td>
<td>19%</td>
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<tr>
<td>Underrepresented</td>
<td>7%</td>
<td>7%</td>
<td>8%</td>
<td>8%</td>
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</tr>
</tbody>
</table>

5,937 6,277 6,465 6,800 7,240
SAT: Incoming Engineering Students
Some of the highest SAT scores across the University

Math: 680
Verbal: 612
Writing: 617
Combined: 1908

World-class engineering through learning, discovery and engagement
Undergraduate Engineering Degrees Awarded 2013-14

1,791 Total Degrees at UP

1525 (CoE)

233 (EMS)

33 (AgSci)
Graduate Engineering Degrees Awarded 2013-14

517 Total Degrees at UP

428 (CoE)

79 (EMS)

10 (AgSci)
Honors Education

Schreyer Honors College
- 27% of students in the Schreyer Honors College are engineering students

Millennium Scholars Program
- Provides opportunities to students who plan to pursue a STEM PhD
- 43% are engineering students
Students Making a Difference

Award-winning Projects
- Department of Energy Wind Competition
- EcoCar Hybrid Electric Vehicle
- Bridges to Prosperity
- THON
Students Making a Difference

Ground-breaking Initiatives

- Lunar Lion
- Engineering Ambassadors
- Innoblue
- LionLaunchPad
Innovative Programs for Students

- Engineering Leadership Development
- Alliance for Education, Science, Engineering and Development in Africa
- Center for Advancement of Undergraduate Studies and Experience
- Humanitarian Engineering and Social Entrepreneurship
- Ryan Family Student Center
- The Learning Factory
- Entrepreneurship and Innovation Minor
- The Leonhard Center
Research Experience for Undergraduates

• Internal REUs
• External REUs
• Competition for undergraduate research funds
WORLD-CLASS ENGINEERING EDUCATION
starts your journey to become a World-Class Engineer

World-Class Engineers are:
SOLIDLY GROUNDED
TECHNICALLY BROAD
GLOBALLY ENGAGED
ETHICAL

INNOVATIVE
EXCELLENT COLLABORATORS
VISIONARY LEADERS

www.engr.psu.edu/worldclass
A Few Words From Our Students
World-class engineering through learning, discovery and engagement

Click here to view the video

Molly Eckman
Biomedical Engineering
Senior
Our Present is Great...

Our Future is World-Class.