table of contents

Priorities
Purdue Engineering Strategic Plan 1

Our Successes
Leveraging Our Strengths 2
Expanding & Strengthening Our Faculty 3
Expanding & Improving Our Graduate Programs 4
Increasing Our Research Excellence 5
Improving Facilities and Environment 6

Our Future
Our Challenges 7
Looking Forward 8
The Engineering Leadership Team 8

Appendix
Undergrad Indicators 10
Faculty Indicators 13
Graduate Indicators 15
Research Indicators 17
Environment Indicators 19
Every day you may make progress. Every step may be fruitful. Yet there will stretch out before you an ever-lengthening, ever-ascending, ever-improving path. You know you will never get to the end of the journey. But this, so far from discouraging, only adds to the joy and glory of the climb.

–Sir Winston Churchill

Purdue Engineering Strategic Plan

Purdue Engineering’s mission to educate tomorrow’s engineering leaders and innovators, to create new knowledge, and to impact the world through discovery underpins our strategic plan. Our plan is aggressive, collaborative, and asserts a commitment to preeminence, principled actions, and sustained change. Execution of the plan over the last four years focused on five priority areas and produced some remarkable successes as well as some challenges that need continued attention.

<table>
<thead>
<tr>
<th>Priorities</th>
<th>LEVERAGE STRENGTH IN EDUCATION</th>
<th>EXPAND &amp; STRENGTHEN FACULTY</th>
<th>INCREASE RESEARCH EXCELLENCE</th>
<th>IMPROVE GRAD PROGRAM QUALITY</th>
<th>IMPROVE FACILITIES &amp; ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>› Improve student quality and diversity</td>
<td>› Continue “cluster hire” strategy to create knowledge communities in signature areas and to improve diversity</td>
<td>› Improve visibility</td>
<td>› Improve student quality and diversity</td>
<td>› Complete planned facilities and reassess remaining needs</td>
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<tr>
<td></td>
<td>› Merge FrE &amp; IDE under new department with research and education thrusts in engineering education</td>
<td>› Increase faculty involvement in NAE</td>
<td>› Develop large-center proposals while leveraging Discovery Park and other University initiatives</td>
<td>› Reorganize CEE while improving proportion and throughput of PhDs in traditional program</td>
<td>› Invest in priorities while sustaining fiscal prudence &amp; improving business processes</td>
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</tbody>
</table>

› Integrate diversity strategy
› Integrate branding and marketing/communications strategy
Leveraging Our Strengths

The stage is set for our continued leadership in engineering education:

a. The EPICS (Engineering Projects in Community Service) program received statewide and national awards for educational innovation and excellence, including the National Academy of Engineering’s Gordon Prize. EPICS doubled the number of its national program sites in five years, from eight to 16 today, far exceeding its original goal of ten.

b. The Summer Undergraduate Research Fellowship (SURF) program grew rapidly, from 49 participants to 155 in only three years, and shows great potential to increase diversity in our graduate programs by expanding its partnerships with diversity-serving programs.

c. Biomedical Engineering launched its new bachelor’s degree program, expanded its faculty, constructed a new building, and endowed and named the school: The Weldon School of Biomedical Engineering. This is a great example of how state, university, and private support can make a big difference in just a short time.

d. Purdue Engineering’s Department of Engineering Education (the nation’s first) is causing a sensation as the vision of our faculty stirs the national passion for improving engineering higher education and infusing engineering into all levels of education—preschool through high school (P-12). The rapidly growing faculty and its first cohort of PhD students are pursuing research-based curriculum reform, P-12 curriculum standards, and a certification program for engineering teachers, all while seeking best practice partnerships on campus, nationally, and globally.

Ultimately, we will see major changes across Purdue Engineering’s curriculum as our Curriculum Reform Task Force engages all of the schools in determining how we will best educate the engineer of 2020—what is now a national discussion. Purdue Engineering has been at the table with the National Academy of Engineering, the American Society of Engineering Education, corporate executives, and other stakeholders to address the needs of our students, the needs of employers, and the needs of our society and global community.
Expanding & Strengthening Our Faculty
We are enjoying heightened national recognition:

a. Three faculty were elected to the National Academy of Engineering (NAE). In addition, our aggressive “cluster hire” strategy—to build knowledge communities within our signature areas—brought four more NAE members to Purdue Engineering.

b. Alex King, head and professor of materials engineering, was named a U.S. State Department Jefferson Fellow. Leah Jamieson, associate dean for undergraduate programs and professor of electrical and computer engineering, was elected president of the Institute of Electrical and Electronics Engineers (IEEE).

c. Total faculty increased by 53. Our faculty are consistently recognized at all levels: junior faculty with three National Science Foundation (NSF) career awards per year, and senior faculty with at least eight professional society fellow appointments per year and a growing number of national research awards.

d. Faculty visibility is improving with 537 placements in AY2004-05 alone in select state, national, and international news media and internet sites. Faculty citations doubled, and in AY2003-04, 64 faculty published books or book chapters and 168 served in editorial positions or on editorial boards of professional journals.
Expanding and Improving Our Graduate Programs

Our graduate program is making strides as faculty college-wide are assessing the program’s strengths and identifying best practices to improve recruiting, mentoring, and diversity:

a. The proportion of PhD to MS students grew, the proportion of domestic students improved, and the number of PhD graduates headed to academia increased.

b. More students were recognized with prestigious awards such as the NSF fellowship, and more enrolled in the distance education degree program.

c. Purdue Engineering’s *U.S. News and World Report* graduate program ranking improved to 10, with three disciplines rated in the top five.
Increasing Our Research Excellence
Our discovery enterprise has also realized great gains:

a. The completion of the Birck Nanotechnology Center—another partnership leveraging funds from government, private donors, and Purdue—brings unique clean rooms and synergistic wet labs to our large community of researchers and students as well as to our industrial and government research partners.

b. Investment in Discovery Park and in our signature areas resulted in new research endeavors along with several major new centers, including the NASA Institute for Nanoelectronics and Computing, the Advanced Manufacturing Center, the Regenstrief Center for Healthcare Engineering, the Energy Center, and the Rolls-Royce University Technology Center—the first established in the U.S.

c. We posted increases in all research measures: proposals submitted (35%), contracts awarded (19%), funding per award (24%), and sponsor expenditures (52%). The averages per faculty for these metrics increased as well.

d. Our faculty created intellectual property worth protecting: Patent filings tripled, and there was a steady growth in patents issued, licensing, and start-ups.
Improving Facilities and Environment

The Master Facilities Plan, conceived in 1999, is unfolding faster than anyone could have imagined. With a boost from The Campaign for Purdue, the building transformation on campus is credited to an incredible partnership of private donors, state and federal support, and university resources:

a. The School of Chemical Engineering’s addition, renamed Forney Hall, was first to break ground, followed quickly by the Robert L. and Terry L. Bowen Laboratory for Large-Scale Civil Engineering Research and the Birck Nanotechnology Center. With these projects completed, the Schools of Chemical and Civil Engineering are raising funds to renovate their existing facilities, and the School of Electrical and Computer Engineering will finish raising the funds needed to build its new facility.

b. The Biomedical Engineering building broke ground in Fall 2003, followed in Fall 2004 by the groundbreaking for Neil Armstrong Hall—the multidisciplinary engineering building that will house EPICS, the Minority Engineering program, the Women in Engineering program, the Department of Engineering Education, the School of Aeronautics and Astronautics, and the School of Materials Engineering.

c. The School of Mechanical Engineering completed fundraising for its building in Fall 2005 and hopes to have additional funding approved in the state’s 2007 biennium budget so work can begin on its addition. And with Aeronautics and Astronautics vacating Grissom Hall in Fall 2007, the School of Industrial Engineering is raising funds to renovate and expand.

d. The original facilities plan called for a 60% increase in assignable space. We have already expanded by at least 50%, and with three new buildings opening in the next two years we will exceed our original plan by 12 percentage points.
The picture wouldn’t be complete, though, if we didn’t also share some of our challenges

- Incoming freshman SAT scores and National Merit Scholars are up (20 points and 34%, respectively) and based on feedback from a recent college-wide survey, students are substantially satisfied with their campus and college life. The ratio of undergraduate students to faculty has markedly improved (from 23:1 to 19:1), and merit scholarships are increasing in value. However, despite efforts to reduce the size of the incoming freshman class to help control quality, it grew substantially.

- While we do see modest improvement in the graduate program and *U.S. News and World Report* rankings, both are slow to reflect our incredible investments in faculty, facilities, and innovative new programs. An external review will supplement our internal graduate program review to help us identify critical performance factors that need our attention.

- Global experiences for our students and faculty are on the rise, but we continue to have a low percentage of undergraduate participation in study abroad programs (<3%) as compared to their expressed interest as incoming freshmen (~40%).

- Diversity is improving among all faculty and student classifications, but progress is slow and inconsistent. For instance, the number of underrepresented minority faculty and students and the number of women faculty increased, but the proportions remained level. The number and proportion of women undergraduate students, however, fell despite some early success with the freshman cohorts. To address these concerns, a diversity recruiting plan is underway for students and an oversight committee was added to the faculty “cluster hire” process.

- We are engaging thousands of pre-college students, teachers, and parents in several dozen excellent outreach programs. Our engagement activities need more coordination and quality control. With a new strategic plan for preschool through high school (written by a university-wide task force), expertise from our Department of Engineering Education, and seed funds to focus on preschool to 6th grade, we should see a visible impact within the next two years.

- With a year left in *The Campaign for Purdue*, we are more than 80% toward our campaign goal, and the engineering endowment has grown by 8% from $189 million. The incredible investment of time and money to accomplish all we have in mind is challenging us to streamline our business practices, assess our priorities, and engage our stakeholders in planning and decisions.
Looking Forward

Take a look around campus and it is obvious that something special is happening. One more year to finish some things up. One more year to set new things in motion. One more year before the count starts again to mark a new adventure. Our gratitude to those of you who have stepped up to the challenge to help us move from our enviable position of excellence to the paramount distinction—preeminence.
Engineering Leadership Team
The Engineering Leadership Team sets and champions priorities for the college, determines strategic plan performance targets, evaluates and, as appropriate, suggests changes to internal policies and practices, assesses the external environment for needs, threats and opportunities, and provides leadership to our stakeholders. Chaired by the Dean of Engineering, Leadership Team membership includes the heads of the engineering disciplines, the dean’s cabinet, and the chairs of the dean’s Faculty Advisory Committee and the Junior Faculty Council.

M. Katherine Banks, Interim Head of Civil Engineering and Construction Engineering and Management, and Professor of Civil Engineering
Keith J. Bowman, Acting Head and Professor of Materials Engineering
Vincent F. Braits, Associate Dean for Resource Planning and Management, and Professor of Agricultural and Biological Engineering
Bernard A. Engel, Head and Professor of Agricultural and Biological Engineering
Thomas N. Farris, Head and Professor of Aeronautics and Astronautics
Audeen Fentiman, Associate Dean for Graduate Education and Interdisciplinary Programs, and Professor of Nuclear Engineering (effective April 1, 2006)
Jay Gore, Associate Dean for Research and Entrepreneurship, and Vincent P. Reilly Professor of Mechanical Engineering
Kamyar Haghighi, Head of Engineering Education and Professor of Agricultural and Biological Engineering
Dale Harris, Executive Director of Engineering Professional Education
Michael T. Harris, Interim Associate Dean for Undergraduate Education and Associate Professor of Chemical Engineering
E. Daniel Hirleman, William E. and Florence E. Perry Head and Professor of Mechanical Engineering
Larry Huggins, Advisor to the Dean for Special Projects
Leah H. Jamieson, Interim Dean Designate and Ransburg Professor of Electrical and Computer Engineering

Linda P. B. Katehi, John A. Edwardson Dean of Engineering and Professor of Electrical and Computer Engineering
Alexander H. King, Head and Professor of Materials Engineering
Klod Kokini, Associate Dean of Academic Affairs and Professor of Mechanical Engineering
Michael R. Ladisch, Chair of the Dean’s Faculty Advisory Committee and Distinguished Professor of Agricultural and Biological Engineering
Christopher J. Martin, Director of Financial Affairs
Edgar J. Martinez, Assistant Dean for Research and Entrepreneurship
Carolyn A. Percifield, Director of Strategic Planning and Assessment
Nagabhushana Prabhu, Head and Professor of Industrial Engineering
Rwitti Roy, Director of Marketing and Communications
Mark J. T. Smith, Head and Michael J. and Katherine R. Birck Professor of Electrical and Computer Engineering
Michael H. Stitsworth, Director of Advancement
Lefteri Tsoukalas, Head and Professor of Nuclear Engineering
Arvind Varma, Head and R. Games Slayter Distinguished Professor of Chemical Engineering
Sharon K. Whitlock, Administrative Director
George R. Wodicka, Head and Professor of Biomedical Engineering
Undergraduate Indicators

SAT Scores

Composite Average

- Goal: 1373
- Peer (F04): 1261
- F01: 1241
- F05: 1373

National Merit Scholars

- F01: 32
- F05: 43

Enrollment - E1s

Headcount

- Goal: 1500
- F01: 1657
- F05: 1734

Enrollment Demographics - E1s

- Women: 30%
- Underrepresented Minorities: 15%
- International: 12%

Enrollment - All Undergraduates

Headcount

- Goal: 6000
- F01: 6440
- F05: 6358

Enrollment Demographics - All Undergraduates

- Women: 30%
- Underrepresented Minorities: 15%
- International: 12%
Faculty Indicators

NAE Membership

Faculty Growth

Faculty Demographics

Cluster-Hire Distribution by Signature Area
Graduate Indicators

- **GRE Scores**
  - Quantitative Average
  - Goal: 767, Peer (F04): 767, F01: 769, F05: 751

- **NSF Fellows**
  - Awards
  - Goal: 25, Peer (F05): 26, F01: 10, F05: 12

- **Enrollment - Grad Students**
  - Headcount
  - Goal: 2029, F01: 3219, F05: 3322

- **Enrollment Demographics - Grad Students**
  - Women: 50%, Underrepresented Minorities: 15%

- **Graduate Support**
  - Average stipend
  - AY 2001–02: $1,468, AY 2004–05: $1,836

- **Fellowship Endowment**
  - Market Value in millions
  - AY 2001–02: $7.0, AY 2004–05: $9.0

- **PhD Time to Degree**
  - Average Years

- **PhD Degrees Awarded per Faculty**
  - Grad/Fac.
  - Goal: 0.7, Peer (F05): 0.4, F01: 0.5, F05: 0.5
Research Indicators
Environment Indicators

Alumni Participation
- FY 2001-02: 14.4%
- FY 2004-05: 12.8%

Private Giving
- FY 2001-02: $74.4
- FY 2004-05: $66.4

Endowment
- FY 2001-02: $188.9
- FY 2004-05: $204.5

Campaign for Purdue
- Total: $482.4
- Goal: $255.9
- Cumulative (as of FY 2004-05): $377.9

Bars represent:
- TOTAL
- Student Support
- Faculty Support
- Programs
- Facilities
- Unrestricted

Goal: $26.5
Cumulative: $45.6
Unique Facilities or Capabilities

- Facilities (F05): 6
- Labs (F05): 16
- Capabilities (F05): 69

Space

- Goal (>2010): 1256.3
- Sp02: 581.4
- Sp06: 886.3