

Purdue University
School of Chemical Engineering

Strategic Plan 2010-2014

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Committee Members

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Purdue University - School of Chemical Engineering
Strategic Plan 2010-2014

Introduction: This strategic plan is formulated as a guide for the School of Chemical Engineering during the next five years. It reflects the areas all members of the School will focus on to reach our vision.

Vision: Be widely recognized among the premier ranks of chemical engineering programs in the world.

Mission: Provide students with a rigorous and relevant education, conduct field-defining research, and enhance the School's global impact.

Values: Leadership, excellence and innovation, relevance and impact, commitment and responsibility, teamwork and partnership, diversity and respect, safety and sustainability.

- 1. Research:** To pursue breakthrough research that extends the boundaries of chemical engineering into areas which promote sustainability and which will have the greatest positive impact on our global society.

Strategies:

- i. Strengthen our position in areas where the School is viewed as preeminent, including: catalysis and reaction engineering, pharmaceutical engineering, advanced process modeling, separation processes, transport phenomena, and molecular simulations. Continue to build upon our strong foundation in areas including renewable energy (e.g., solar, biofuels, energy storage) and biomedical engineering, with the aim of becoming recognized as a top-tier program for research in these areas
- ii. Recruit and retain exceptional faculty whose interests align with our strategic and emerging research areas
- iii. Focus our efforts on securing large, interdisciplinary, multi-year research projects that have potential for significant impact
- iv. Engage new companies that partner with the School in collaborative research programs, at levels of \$100K/year or more

Metrics:

- i. Number of faculty publications in peer-reviewed journals, especially those with high-impact. Journals include those with broad high impact (e.g. *Nature* and *Science*) and high impact journals relevant to specific chemical engineering research fields
- ii. Number of publication citations (total and per faculty member), including h-index values for each faculty member
- iii. Number of national and international awards (total and per faculty member) for research and professional progress
- iv. Research grants awarded, proposals submitted, and research expenditures (total and per faculty member)
- v. Number of companies that partner with the School in collaborative research programs, at levels \$100K/year or more

2. Education:

- a) **Graduate Programs:** Recruit and retain high caliber graduate students from top-tier chemical engineering programs, provide challenging and relevant research programs, and a quality graduate level education.

Strategies:

- i. Offer attractive research programs, competitive compensation, and quality graduate level education
- ii. Foster a creative, respectful, and supportive environment for graduate students to develop into well-rounded independent researchers and leaders
- iii. Increase enrollment from a diverse group of high quality US citizen and international graduate students
- iv. Promote applications for nationally competitive fellowships, awards and travel grants
- v. Increase the number of PhD graduates who pursue academic careers

Metrics:

- i. Quality: Average GPA, GRE scores
 - ii. Diversity: Percentage of underrepresented minority and women
 - iii. Percent of entering graduate students who are US citizens, from top tier US undergraduate programs, and from identified first-tier international institutions
 - iv. Level of satisfaction index obtained via graduate student exit survey
 - v. Number and percentage of graduate students with external awards and fellowships
 - vi. Number and fraction of graduate students accepting tenure track faculty positions
- b) Undergraduate Programs:** Recruit and retain the most capable, motivated and diverse class of undergraduates, and help them to obtain a solid and relevant education throughout their Purdue experience.

Strategies:

- i. Continually review the curriculum to maintain its relevance to current and future societal needs
- ii. Provide multiple, challenging opportunities for team and group activities in courses and laboratories
- iii. Provide competitive scholarships and promote applications for nationally competitive awards
- iv. Expand opportunities for internships and co-operative education experiences
- v. Maintain the high quality of the Honors program and further encourage undergraduate research

Metrics:

- i. Number and fraction of students with an overall GPA and Engineering Index of 3.2 and higher
- ii. Number and fraction of students receiving scholarships and Purdue and national awards
- iii. Average value of various responses for course, instructor and overall program quality from surveys/course evaluations
- iv. Number and fraction of students with internships and participating in the co-op program
- v. Fraction of seniors who enter graduate programs

3) Global Impact: Educate undergraduate and graduate students who will be successful in a global environment. Cultivate and expand research relationships with prominent international research organizations.

Strategies:

- i. Increase undergraduate student participation in Study Abroad Programs
- ii. Strengthen existing study abroad partnerships to ensure an outstanding experience for the students
- iii. Add 3 new study abroad partnerships with overseas ChE programs targeting Asia and Latin America

- iv. Expand existing relationships with global universities to include overseas research opportunities for faculty and students
- v. Increase the number of international exchange students who come to our School

Metrics:

- i. Number and fraction of students enrolled in Study Abroad Programs (summer, semester, year)
- ii. Number of international study abroad partnerships (existing and new)
- iii. Number and percent of international exchange students who come to our School
- iv. Number of papers published that have a co-author from an international institution
- v. Number of graduate students who engage in a research experience overseas (university or industry)

4) Development – Secure and improve the School’s financial foundation as a means to continually improve its programs and physical facilities, while balancing short and long term goals.

Strategies:

- i. Complete the Forney Hall renovation and maintain state-of-the-art research, classroom, and office facilities
- ii. Increase the endowment for unrestricted uses (e.g. special initiatives, program and facilities enhancements)
- iii. Increase the endowment for restricted uses (professorships, undergraduate scholarships, graduate fellowships, start-up expenses)
- iv. Increase the fraction of alumni who donate to the School annually
- v. Increase the number of Industrial Advisory Council members and encourage all companies to contribute at the full annual \$25,000 level

Metrics:

- i. Complete the fund-raising goals for 2009-14:

- a. Renovation - \$1.35 M
- b. Student Access and Success - \$3.34M
- c. Innovative Learning Environments - \$5M
- d. Faculty Creativity and Discovery - \$15M
- e. Leadership Development - \$1M
- f. Global Initiatives - \$2M
- g. Other (primarily unrestricted) – \$5M

Total - \$32.69 M

- ii. Increase the number of alumni who donate annually to the School by 45%/year, thus increasing alumni participation from 12% currently to 15%
- iii. Increase the number of ChE Ambassadors Club members to 100
- iv. Increase the Industrial Advisory Council membership by 1/year

5) Engagement - Encourage faculty, students and staff to develop a sense of personal responsibility and accountability for service at both the local and national levels. Promote entrepreneurial activity, leading to intellectual property, including invention disclosures and patents. Become a leader in sustainability on the Purdue campus.

Strategies

- i. Encourage faculty, staff and students to increase involvement and leadership in local and national organizations

- ii. Encourage development of intellectual property
- iii. Increase the number of faculty who advise and collaborate with industry
- iv. Support the new ChE Sustainability Initiative (CSI), and its programs and projects

Metrics

- i. Number and fraction of faculty, staff, and students (both undergraduate and graduate) involved in local and national organizations, as members and as leaders
- ii. Number of invention disclosures and patents, total and per faculty
- iii. Number and fraction of faculty who consult and collaborate with industry
- iv. Track metrics identified by the ChE Sustainability Initiative (e.g. electricity usage, degree of recycling, reduction in paper usage per capita)

- 6) Professional Development and Recognition** – Encourage all faculty, staff, and students to participate in activities that will enhance their career, develop their skills, and help them become more creative and productive. Actively promote recognition by internal and external award nominations.

Strategies:

- i. Encourage and support participation in professional development activities
- ii. Increase Purdue and national award nominations
- iii. Implement School level staff and graduate student awards
- iv. Promote AIChE Outstanding Student Chapter Award

Metrics:

- i. Number of faculty, staff and students who participate in professional development activities, such as conferences, workshops, etc
- ii. Number of Purdue and national level awards received by faculty, staff and students

- 7) Culture and Environment:** Create an environment where faculty, staff and students are treated with respect and where superior teamwork is achieved. Enhance and expand safety activities and safety education.

Strategies:

- i. Provide diversity training that includes respect and tolerance
- ii. Provide teamwork training to enhance performance
- iii. Annually renew safety indemnification with Purdue

Metrics:

- i. Level of satisfaction index obtained via new faculty and staff environment survey
- ii. Percentage of faculty, staff and students who complete diversity training
- iii. Percentage of new employees (faculty, staff and students) who complete safety training
- iv. Percentage completion of annual lab and office safety audits

Note: All metrics will be evaluated on an annual basis.