Purdue University
School of Chemical Engineering

Strategic Plan 2015-19

December 15, 2014

Committee Members

Faculty: Bryan Boudouris, Jeffrey Greeley, Sangtae Kim, Zoltan Nagy, Arvind Varma (Head)

Staff: Cristina Farmus, Chris Murray, Gabriela Nagy, Karissa Raderstorf, David Williams

Students: Frank DeVilbiss, Nicole Devlin (Presidents, Graduate Student Organization), Daniel Custer (BSChE 2014), Katie Phillips (Presidents, ChE Student Advisory Council)

Alumni: Jennifer Curtis (BSChE ’83), Russell Nix (BSChE 2008), Jamey Young (PhD 2005)

Industrial Advisory Council members: Billy Bardin (IAC Chair), Richard Narta (BSChE ’80)

Introduction: This strategic plan is formulated as a guide for the School of Chemical Engineering during the next five years. It reflects the School's focus areas to achieve our vision.

Vision: Continue to be among the premier 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: Integrity, excellence, leadership, diversity, sustainability

Education

A. Undergraduate Programs

Maintain a highly capable, motivated and diverse body of undergraduates, and help them to obtain a strong and relevant education throughout their Purdue experience.

***Strategies**:*

i. Prepare students for success in industrial, academic, and other careers

ii. Continually review the curriculum to maintain its relevance to current and future societal needs

iii. Enhance teaching effectivenss in undergraduate curriculum

iv. Expand opportunities for internships, Co-Ops, and undergraduate research

***Metrics**:*

a) Employment and graduate school placements

b) Obtain regular feedback from students, alumni, and Industrial Advisory Council on curriculum relevance to industrial careers

c) Annually review responses for course quality and instructor performance from student evaluations

d) Number of students engaged in internships, Co-Ops, and undergraduate research

B. Graduate Programs

Recruit and retain a high-caliber, motivated and diverse body of graduate students, promote the scientific visibility and development of PhD students, and increase the size and impact of the Professional MS program.

***Strategies**:*

i. Increase enrollment of high-quality domestic and international graduate students

ii. Promote graduate student applications for nationally competitive fellowships and travel grants

iii. While continuing our tradition of success in producing industry leaders, encourage PhD graduates to pursue an academic track

iv. Increase participation in the Professional MS program

***Metrics**:*

a) Average GPA and GRE scores, and undergraduate research participation of incoming graduate students

b) Number of graduate students who successfully compete for external fellowships and travel grants

c) Number of PhD students who pursue and accept tenure-track faculty positions

d) Enrollment in the Professional MS program

Research:

Pursue breakthrough research that extends the boundaries of chemical engineering into areas that promote sustainability and have the greatest positive impact on our global society.

Strategies:

i. Strengthen our position in areas where the School is preeminent, including: catalysis and reaction engineering, pharmaceutical engineering, and process systems engineering. Continue to build upon our strong foundation in areas including energy (e.g., solar, fossil, bio-based, energy storage), molecular simulations, polymers, and the biological domain of chemical engineering.

ii. Recruit and retain exceptional faculty whose interests align with our strategic and emerging research areas

iii. Focus 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 per year or more

v. Encourage development of intellectual property

Metrics:

a) Number of faculty publications in peer-reviewed journals, especially those with high-impact

b) Number of publication citations, including h-index values for each faculty member

c) Number of national and international awards for research and professional progress

d) Research funding

e) PhD student graduation rates

f) Number of companies that partner with the School in collaborative research programs at levels of $100K per year or more

g) Number of invention disclosures and patents

Global Impact

Educate undergraduate and graduate students who will be successful in a global environment. Cultivate and expand research and educational relationships with prominent international institutions.

***Strategies*:**

i. Increase undergraduate student participation in Study Abroad Programs

ii. Strengthen existing and add new study abroad partnerships to ensure outstanding student experience

iii. Increase the number of international visiting scholars and exchange students

iv. Expand existing relationships with international institutions to include overseas research opportunities for faculty and students

Metrics:

a) Number of graduating students who participated in Study Abroad Programs

b) Number of international study abroad partnerships

c) Number of international visiting scholars and exchange students

d) Number of papers published that have a co-author from an international institution

Development

Secure and improve the School's financial foundation and enhance faculty resources while balancing short- and long-term goals.

Strategies:

i. Raise funding for faculty start-up expenses

ii. Increase the endowment for unrestricted uses (e.g. special initiatives, program and facilities enhancements) and restricted uses (professorships, undergraduate scholarships, and graduate fellowships)

iii. Increase the number of alumni who donate to the School annually by approximately 100 per year and double the number of ChE Ambassadors Club members

iv. Increase the number of Industrial Advisory Council members by one per year and encourage all companies to contribute at the full annual level

***Metrics*:**

a) Complete the fundraising goals for faculty support, student support, facilities, programs, and unrestricted

b) Number of alumni who donate to the School annually

c) Number of ChE Ambassadors Club members

d) Number of Industrial Advisory Council companies

Engagement

Encourage faculty, students and staff to develop and engage in activities in the professional community, with industry and the local and Purdue community to enhance the overall academic experience.

***Strategies**:*

i. Increase the number of faculty who advise and collaborate with industry

ii. Increase the number of faculty, staff and students who serve in leadership positions for professional organizations

iii. Increase industrial participation in the Co-Op and internship programs

iv. Encourage faculty, staff and students to support and participate in outreach activities

v. Establish presence in the distance education arena

Metrics:

a) Number of faculty engaged in consulting with industry

b) Number of faculty, staff and students serving in leadership positions for professional organizations

c) Number of industrial partners participating in the ChE Co-Op program

d) Number of outreach activities organized per year

e) Number of prominent core and elective online courses

Culture and Environment

Foster an environment that is dedicated to excellence in achieving the educational and research objectives of the School. Encourage professional development, leadership, and team-building activities. Support recognition by internal and external award nominations. Promote a culture of respect and inclusiveness, and a commitment to safety.

Strategies:

i. Increase participation in professional development activities

ii. Increase national and Purdue award nominations

iii. Provide diversity training that includes respect and tolerance; increase the number of seminar speakers from groups that are traditionally underrepresented in science and engineering

iv. Provide an incident-free work environment and renew the Purdue safety indemnification annually

Metrics:

a) Number of staff members who participate in professional development activities, such as conferences, workshops, etc.

b) Number of national level and Purdue (college and university) awards received by faculty, staff, and students

c) Number of faculty, staff, and graduate students who complete diversity training; number of seminar speakers from traditionally underrepresented groups in science and engineering

d) Successful completion of all lab and office safety audits, and required safety training for all faculty, staff, and students

e) Quantify effectiveness of these strategies through the level of satisfaction index obtained via the faculty, staff, and student environment survey

Note: All metrics will be evaluated on an annual basis. The baseline year is 2013-14.