



# Department of Chemical Engineering





## PREAMBLE

The engineering departments, school and centers of the College of Engineering at Penn State have developed robust and forward-looking strategic plans over the past year. Since the strategic planning effort was initiated, there have been considerable developments at the University on strategic planning. A new University-wide plan is currently under development, the latest graphical representation of which is included in the appendix. There is also a desire to establish institutional priorities at the College of Engineering where focus is placed on creating new opportunities for education and research that are aligned with global challenges and mesh with University priorities. It is equally important to maintain the flexibility of supporting individual and small group initiatives as the College has done in the past.



## VALUES

### **Excellence**

We will pursue excellence in our educational and research programs, supporting our faculty, staff, and students in their individual and collective efforts to achieve their personal and professional goals.

### **Innovation**

We seek and embrace innovation in teaching and learning, research and discovery, and service and governance.

### **Professionalism**

Ethics and integrity are core values within the Chemical Engineering Department. We pursue these in all of our research and teaching activities, including our emphasis on safety, both in the laboratory and throughout the Department.

### **Collaboration**

Interdisciplinary collaboration is central to the success of Chemical Engineering. Our research programs are well aligned with the major Research Institutes at Penn State. Our faculty collaborates with colleagues across Penn State and throughout the world. We strongly support the use of joint hires and courtesy-appointed faculty in the core activities in Chemical Engineering.

## VISION

The Department of Chemical Engineering at Penn State will be recognized as one of the leading comprehensive programs in the country, fulfilling its part of the University's proud historical land-grant mission through excellence in teaching, research, and service.

## MISSION

The mission of the Chemical Engineering Department at Penn State is to foster a community of learning and scholarship, to create new knowledge and technology and to enable our graduates to identify and achieve their goals.



# STRATEGIC OBJECTIVES



## Education

Develop undergraduate and graduate programs that enable our students to identify and pursue their personal and professional goals while obtaining a strong foundation in the principles of chemical engineering.



## Research

Pursue cutting edge research across the breadth of the chemical engineering discipline that addresses current and future societal/technological needs.



## Service

Contribute to and provide leadership in professional organizations, leading technical publications, and government/industry drawing upon the unique expertise and experience of our faculty, staff, and students.



## Institutional Governance

Create and implement structures and procedures based on the principles of shared governance that support our faculty, staff, and students. Pursue strategies that support and enhance due process, agility, flexibility, and efficiency in our administrative and financial systems.



# STRATEGIC GOALS



## **In Education**

Strategic goals in education include i) strengthening and modernizing our undergraduate and graduate curricula, ii) enhancing the educational experience by strengthening professional development opportunities for our students, and iii) providing world-class safety programs.

These goals will be achieved by taking the following actions:

1. Implement new undergraduate curriculum that addresses critical needs (e.g., new required courses in Process Safety, Computational Tools for Chemical Engineering).
2. Explore opportunities for leveraging new technologies, including online teaching, to enhance the educational experience.
3. Expand opportunities for experiential learning including undergraduate research, co-op and internships, hands-on special projects, and entrepreneurship programs.
4. Increase networking interactions between our students and alumni, including expanding our alumni mentoring program to include graduate students.
5. Develop and implement world-class safety programs, both in our research laboratories and in our educational programs.



### **In Research**

Strategic goals in research include i) developing and implementing plans to expand and modernize the research facilities, ii) strengthening the faculty by supporting and retaining the current faculty and by hiring new faculty in strategic research areas, iii) increasing the quality of the graduate students, and iv) enhancing the scope and impact of our research programs.

These goals will be achieved by taking the following actions:

6. Working with the University to design a new building for Chemical Engineering and Biomedical Engineering that provides state-of-the-art research and teaching facilities, that encourages collaboration, and integrates the highest standards of safety.
7. Retaining all of the current faculty by providing a supportive environment including the resources needed for the faculty to achieve success.
8. Hiring several new faculty in targeted research areas that leverage our existing strengths and align with University strategic initiatives.
9. Providing support for faculty to prepare and lead multi-investigator research programs (IGERT, ERC, GAANN, etc.), including both teaching release and planning funds.
10. Generating gift funds (endowment and corporate support) for sufficient graduate student fellowships to fully-support all first year graduate students in chemical engineering.
11. Enhancing our graduate student recruiting activities, including the use of well-supported and visible graduate fellowships.
12. Developing and implementing new strategies for broadly marketing the research accomplishments of our faculty and graduate students.



### **In Service**

Strategic goals in service to the technical community and society include i) increasing the impact of Chemical Engineering within the broader technical community, and ii) strengthening and expanding partnerships with key partners in research and education.

The following actions support our service strategic goals:

13. Provide support and encouragement for faculty to pursue leadership roles in professional organizations and in editorial positions for major technical publications.



14. Strengthen existing international programs (e.g., with Dalian and Yonsei) and corporate partnerships (e.g., with Dow and Air Products).
15. Develop new partnerships with both academic and corporate institutions in strategic areas, including opportunities in the development of multi-investigator research initiatives.



### **In Governance**

Strategic goals in institutional governance help to i) improve the operation and administration of the Chemical Engineering Department, ii) develop and implement strategies for more effective management of Department budget and endowments to support research and educational initiatives, and iii) explore ways to more effectively involve alumni in Chemical Engineering.

These goals will be achieved by taking the following actions:

16. Establish the position of Associate Department Head to provide support and back-up for the Department Head.
17. Re-examine responsibilities of staff and faculty to increase effectiveness and insure equitable and appropriate workload distribution.
18. Review historical budgets and work with the College to develop appropriate strategies for managing carry-forward funds and making strategic investments.
19. Strengthen efforts of our Alumni Programming Group to support professional development activities.
20. Examine best practices and implement more effective strategies for using our Industrial and Professional Advisory Committee to support the Chemical Engineering Department.

The above 20 actions for advancing the Department in education, research, governance, and service form the basis of the implementation plan that will be developed in the next phase of strategic planning.