

College of Engineering Strategic Plan Academic Years 2010-2016

I. MISSION

To serve the state, the nation, and the world by graduating talented, broadly educated engineers, conducting high quality research, developing new technologies, and creating, disseminating and preserving knowledge.

II. VISION

To be the best at serving society by creating engineering knowledge and educating engineers for dynamic and global careers.

The following strategic characteristics and aspirations enable the College to realize its vision:

- Contemporary and rigorous educational experiences that develop the *engineer and something more*;
- *An atmosphere* that facilitates personal commitment to the educational success of students in an environment that *values diversity and community*;
- Education and research *partnerships* with UI colleges, and targeted agencies, universities, and industries;
- Highly *successful alumni* who contribute to the profession in the global society;
- Undergraduate programs that integrate *global awareness, communication skills* and *team building* across the curriculum;
- *Internationally recognized research programs*;
- Prudent and accountable *resource management*;
- Graduate education and training that prepares students for *interdisciplinary engineering research* and advanced problem solving;
- *Leadership and service* to meet society's needs.

III. STRATEGIC PRIORITIES

The College’s strategic priorities—the four complementary, mutually supporting areas in which we will invest for accelerated advancement—are directly aligned with those of the University:

- **Student success,**
- **Knowledge and practice,**
- **New frontiers in the arts, and**
- **Better futures for Iowans.**

These are areas in which we will build on ongoing strengths, seize new opportunities, and advance our core commitments for focused excellence.

Student success

Undergraduate student success

The University-wide strategic plan identifies three dimensions to this priority: Quality, access, and affordability. The College of Engineering will advance all three dimensions of this priority through strategies that are based upon a dynamic student experience life cycle that integrates K-12, recruitment, creating a supportive community, advising and retention, classroom experience, experiential learning, professional development, pre- and post-graduation experiences, and alumni relations, as illustrated by the figure below:



Graduate and professional student success

We will continue to recruit the very best graduate and professional students from Iowa and beyond whose achievements and diversity will enrich the intellectual excellence of our programs. The total educational experience at the University will promote their academic and professional success. University and College funding for graduate programs will be linked to program quality and to student success (including improved and timely degree completion).

Knowledge and practice

The College has a long and successful tradition of interdisciplinary and cross-college scholarship. We will build on that success and mobilize the College's scholarly capacities to address major societal and professional challenges of our time—areas of national or global need and significance that require the collaborative efforts of multiple disciplines.

New frontiers in the arts

The creative processes in engineering and art are naturally synergistic. We will integrate engineering educational programs to complement the full range of the University's arts programs in innovative ways that will generate educational opportunities and stimulate creative work among students, faculty, staff, visiting artists and scholars, and engineering professionals.

Better Futures for Iowans

Public research universities evolve by addressing the needs of each generation in each state. The College will expand its public engagement to contribute to economic and cultural vitality and to the health and quality of life of the people of Iowa. We will help place-bound Iowans achieve their educational aspirations. We will align College resources with important state needs.

IV. STRATEGIC INITIATIVES

The following initiatives form the roadmap for realizing the vision of the College of Engineering. Each initiative is followed by a representative (not comprehensive) list of action items.

Access and enrollment growth

Increase the size and mix of students for the College over six years.

- Encourage more Iowans, and particularly women and other under-represented groups, to pursue a degree in engineering through effective K-12 outreach programs.
- Expand scholarship opportunities and optimize the use of scholarships to meet strategic goals.
- Enhance programs to support retention and encourage all students to successfully complete their engineering studies.
- Enhance interactions and relationships with community colleges.
- Increase College involvement in distance learning in the state and beyond.

Undergraduate student success

Create the best student-centered experiences in engineering.

- Maintain the highly attractive small-college experience to preserve distinguishing characteristics of high engagement and interaction among students, staff, and faculty and graduation of students.
- Maintain a size and mix of faculty, lecturers, and adjuncts that provide the highest quality educational experience and meet enrollment needs.
- Enhance the facilities and infrastructure, including classroom and student space, to maintain the collaborative and engaging small college atmosphere.
- Promote opportunities for students to pursue minors, double majors, and certificates within the engineering curriculum.
- Promote and support experiential learning opportunities for undergraduate students, including co-ops, research experiences, service learning experiences, and real-world collaborative design projects.
- Improve the process for academic advising by sharing responsibilities among departmental faculty advisors and Student Development Center advisors.
- Promote and support global learning opportunities for undergraduate students, including study-abroad experiences and international service learning experiences.
- Support the development of students' communication skills through the curriculum and the Hanson Center for Technical Communication.
- Expand the tutoring program offered free of charge to undergraduate students.
- Support undergraduate students' development of leadership skills through opportunities such as student organizations and the Student Leadership Institute.

Graduate and professional student success

Enhance student success and focused excellence in graduate and professional programs.

- Achieve modest growth in graduate degree production while continuing to improve quality and effectiveness.
- Provide competitive graduate student teaching assistant/research assistant/fellowship support, with priority to students declaring PhD as their study objective.
- Improve efficiency and diversity of course offerings by coordinating courses common to multiple departments (such as numerical methods, green energy courses, and statistics for research in engineering); introducing new courses that align with interdisciplinary thrusts within the College; and better utilizing course offerings outside of the College.
- Reduce barriers for interdisciplinary studies within and outside of the college.
- Increase graduate students' exposure to other disciplines and allowing participation in inter-departmental seminars.

- Explore the development of new professional master's programs in select high-demand areas.
- Share best practices and improve graduate student recruiting.
- Ensure that all graduate students are trained in best research practices, including ethics, safety, intellectual property management, and International Traffic in Arms Regulations (ITAR).
- Develop new graduate student training programs such as the Integrative Graduate Education and Research Traineeship Program (IGERT).
- Enhance the experiences of College post-doctoral fellows, building upon the University's Office of Post-Doctoral Scholars.

Scholarly inquiry and creative work

Put knowledge into practice to address “grand challenges” of the 21st century, building on our existing and emerging strengths.

- Encourage further strategic collaboration with the University's Health Sciences colleges to develop new technologies that will enhance medical care.
- Pursue cluster hires and leadership in multidisciplinary activities including large center and institute proposals.
- Enhance College research excellence by upgrading and expanding laboratory space and improving the capabilities and support for research computing.
- Expand activities related to management of intellectual property and economic development, and enhance efforts to encourage researchers (students, faculty, and staff) to think entrepreneurially and to innovate.
- Provide better support for faculty and staff to pursue sponsored research, for example by establishing the Engineering Grant Support Office.
- Improve the information technology infrastructure for collaboration (including software tools, research meeting spaces, video conferencing facilities), promote utilization of existing resources, and improve ease of access and use.
- Develop initiatives to build a stronger community of researchers within the College.
- Improve internal evaluations of the College by tracking scholarly productivity metrics and benchmarks (e.g., H-index, citation-based indices, impact factor of journals/conferences).
- Increase faculty nominations for societal, national, and international awards.

Arts synergies

Incorporate the College into the University's tradition of leadership in the arts by creating connections with Arts programs in writing, theater, painting, printing and book-making, music, and dance.

- Develop agreements with the Arts programs that define and promote specific courses available to Engineering majors (course cross-listings or team-taught, for example).

- Promote and support student design projects that include collaborations between Engineering students and Arts students (including student organization projects and course projects) to collaborate on the University campus and select Iowa communities.
- Develop and refine Elective Focus Areas that include coursework within the Arts programs (Pre-Architecture EFAs, for example).
- Promote and support access to the College machine shop for use by Art majors and Studio Art facilities to Engineering students.
- Display more art in the Seamans Center for the Engineering Art and Sciences.
- Establish collaborations with the digital arts and digital humanities initiative on campus.

Internationalization and diversity

Enhance educational excellence by expanding domestic and international diversity and by bringing the world to Iowa and taking Iowa to the world.

- Target admissions and recruiting to obtain a broader and more diverse profile of students.
- Continue to support and develop programs which help undergraduate and graduate students from underrepresented groups to succeed.
- Promote and develop study abroad opportunities for undergraduates.
- Continue to promote and develop College courses and projects which include international experiences.
- Promote and develop international experiences for graduate students such as research collaborations and participation in international conferences.
- Enhance infrastructure and facilitate the use of video-conferencing and web-casting technologies to facilitate international collaborations.

Sustainability

Integrate sustainability into all aspects of the university enterprise – academics, operations, and outreach

- Expand the already well-developed leadership roles of students, faculty, and staff in the discovery and practice of sustainability at the University and beyond.
- Increase the number of students enrolled in sustainability-related courses and EFAs.
- Expand research that enhances environmental sustainability.
- Inspire sustainable practices throughout the college's operations.

Public outreach and civic engagement

Extend the reach of the University's and College's missions.

- Expand relationship-building programs that serve the key constituents – including alumni and friends of the College, state government officials, corporations, government agencies, potential and enrolled students, and parents.
- Expand K-12 efforts via Project Lead the Way, FIRST, and specialized engagement programs (i.e. PharmCamp, etc.).
- Pursue the application of science and technology which helps Iowans prepare for “the unexpected and the unimaginable” (i.e., Iowa Flood Center).
- Continue to assess constituents’ needs and develop appropriate outreach programs.

Efficiency and effectiveness

Maximize impact by being more collaborative, enterprising, and innovative; align budget allocations and reallocations with strategic priorities.

- Attract and retain outstanding faculty and staff.
- Achieve higher levels of individual and corporate/foundation financial support for the College in collaboration with the UI Foundation.
- Develop new teaching and research space needed to reflect enrollment growth at the undergraduate level and extramural research support growth at the research level, including modular, reconfigurable laboratories.
- Practice budget discipline and realize cost savings through on-going administrative and academic streamlining.
- Consider alternative educational delivery models that maintain quality and lower costs.
- Inform, persuade, and engage constituents by aligning College communication resources with those of other University colleges and units, utilizing emerging technologies and activities such as internet advancements, social media, electronic mail, electronic distance learning, and electronic publications.
- Optimize investments in College computational resources through coordination and collaboration with campus-wide initiatives (e.g., high-performance computing, high-efficiency low-cost data storage).
- Review curricular, procedural, and policy requirements that impede progress to degree, and consider innovations that would help students complete their degree faster.
- Establish the Engineering Grant Support Office to support faculty and staff to pursue increased extramural funding.
- Investigate mechanisms to facilitate bridging research support for successful research groups that need to manage occasional lapses in funding.

V. PROCESS

The College of Engineering strategic plan builds from and supports the University of Iowa strategic plan: *Renewing the Iowa Promise: Great Opportunities – Bold Expectations*. After the University’s strategic plan was adopted in the Fall of 2010, the College organized and charged four strategic planning committees aligned with the four pillars of the University’s plan. These committees were made up of faculty, staff, and students, and invited input from advisory board members, as illustrated by the committee rosters below (advisory board members in italics):

Student Success

Michelle Scherer (chair)
Tonya Peebles
Nicole Grosland
Anton Kruger
Bill Eichinger
H.S. Udaykumar
Susan Beckett
Nancy Schneider
Phil Jordan
Megan Allen
Kelli Delfosse
Kandace Munson
Elizabeth A Risius
Bob Kress
Roger Utman
Adrian LaTrace
Sharon Tinker

Better Futures for Iowans

Larry Weber (chair)
David Rethwisch
Olesya Zhupanska
Erwei Bai
Jan Waterhouse
Fred Streicher
Wendy Brentner
Rebecca Whitaker
Terry Kouba
Phil Larson
Kelly Ortberg
Mitch Corbett
Herm Reininga

Knowledge and Practice

Milan Sonka (chair)
Witold Krajewski
Charlie Stanier
M.L. Raghavan
Pavlo Krokmal
Doug Eltoft
Dina Blanc
Rachel Marek
Bernardo Perez
Brian Rauch
Bennett Reischauer
Selcuk Uzuner

New Frontiers in the Arts

Tom Casavant (chair)
Mona Garvin
Craig Just
David Wilder
Diana Harris
Jane Dorman
Shawn Allen
Amanda DeHoedt
Bruce Keith
Roger Vincent
Karen Kjar
Jerry Schnoor

The following timetable was used for the strategic planning process:

- Process described in the state-of-the-college presentation by the dean February 4
- Four committees constituted, charged, and begin meeting March 9
- Committees present initial ideas to one another April 4
- Committees invite input from the College advisory board April 8
- Committees submit reports to the dean's office May 9
- Dean's office draft plan based upon committee reports Summer
- Draft plan modified with input from Engineering faculty and staff September

The voting faculty endorsed the College of Engineering 2010-2016 Strategic Plan and Metrics on October 11, 2011.

Primary responsibility for overall implementation of the College Strategic Plan lies with the Dean. The Dean will prepare an annual progress report for the faculty and staff that includes a comparative summary to prescribed plan metrics.