

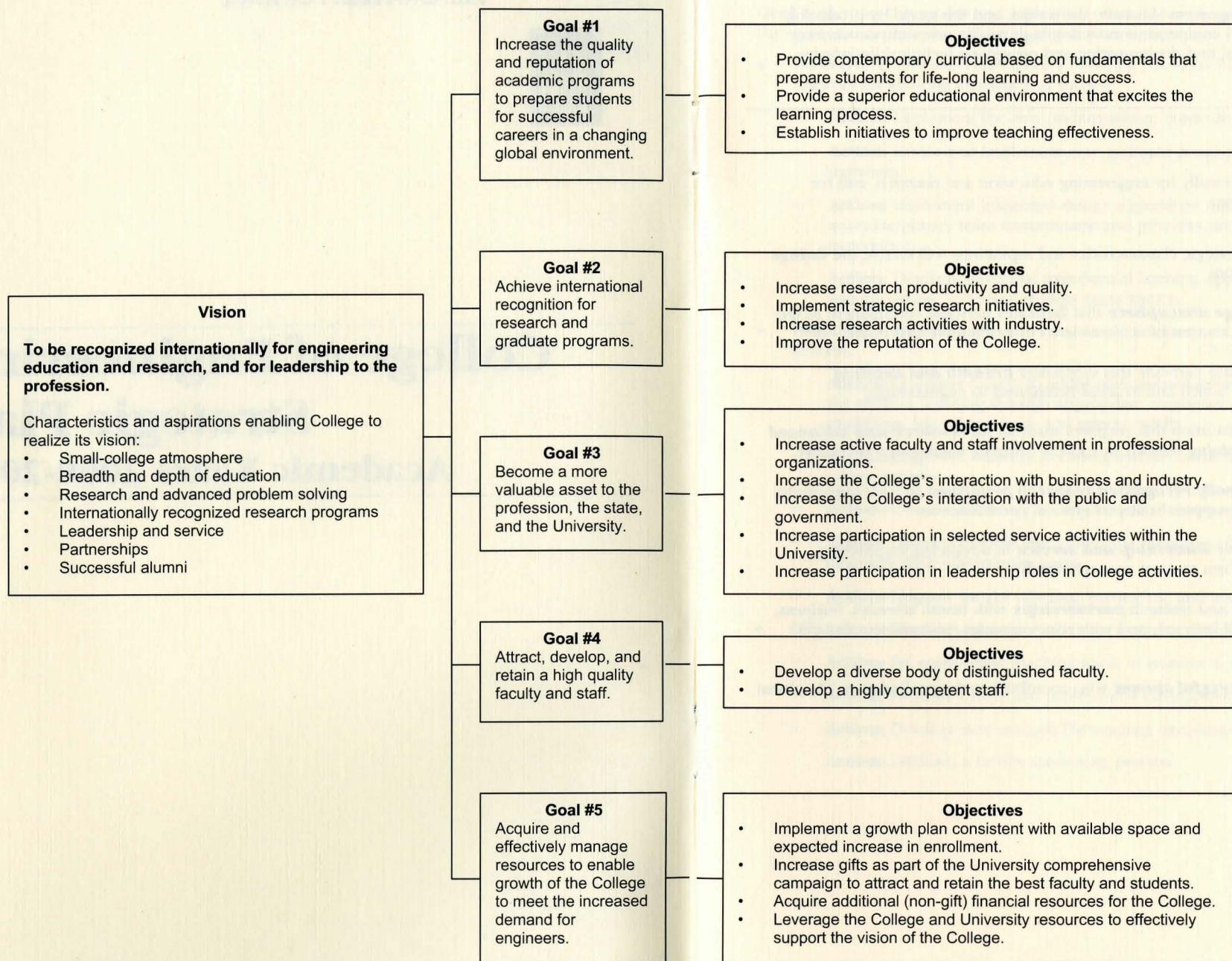
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THE UNIVERSITY OF IOWA

College of Engineering Strategic Plan

Academic Years 2000-2005

The University of Iowa College of Engineering Strategic Plan Summary for Academic Years 2000-2005



I. MISSION

The College of Engineering serves the state, the nation, and the world by producing talented, broadly educated engineers, conducting high quality research, developing breakthrough technologies, and disseminating and preserving technical knowledge.

II. VISION

To be recognized internationally for engineering education and research, and for leadership to the profession.

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

- **Small-college atmosphere** that facilitates personal commitment to the educational success of students in a comprehensive university.
- Undergraduate curricula that emphasize **breadth and depth of education**, which link to areas contiguous to engineering.
- Graduate education that prepares students for **research and advanced problem solving** needed to address complex engineering problems.
- **Internationally recognized research programs** in each department with strong support from professional constituencies.
- Demonstrable **leadership and service** in advancing engineering professionalism to meet society's needs.
- Educational and research **partnerships** with health sciences, business, and other UI colleges, and with select agencies, universities, and industries.
- Highly **successful alumni** who contribute to the profession in the global society.

III. GOALS, OBJECTIVES, AND TASKS

Goal 1: Increase the quality and reputation of academic programs to prepare students for successful careers in a changing global environment.

- **Objective 1:** Provide contemporary curricula based on fundamentals that prepare students for life-long learning and success.
 - **Action:** Implement the new undergraduate curriculum.
 - **Action:** Revise and implement new graduate programs that focus on strategic initiatives.
 - **Action:** Implement integrated design experience that exposes students to multidisciplinary team environment and provides project management experience.
 - **Action:** Develop additional experiential learning opportunities for students and encourage increased student participation.
- **Objective 2:** Provide a superior educational environment that excites the learning process.
 - **Action:** Empower faculty to adopt new technologies and innovative methods for effective learning through appropriate combination of instruction in classroom, laboratory, field, and remote media.
 - **Action:** Empower students to choose elective areas to develop knowledge for career success.
 - **Action:** Provide additional undergraduate research opportunities for students.
 - **Action:** Develop flexible and innovative programs of study for students in emerging multi-disciplinary areas.
 - **Action:** Upgrade faculty advising, mentoring, and accessibility for students.
- **Objective 3:** Establish initiatives to improve teaching effectiveness.
 - **Action:** Set appropriate teaching loads in relation to research and service.
 - **Action:** Promote career and professional development.
 - **Action:** Develop new rewards for teaching excellence.
 - **Action:** Establish a faculty mentoring process.

Goal 2: Achieve international recognition for research and graduate programs.

- **Objective 1:** Increase research productivity and quality.
 - **Action:** Increase peer-reviewed research funding.
 - **Action:** Increase publications in high quality journals and conference proceedings.
 - **Action:** Increase number of national and international faculty awards.
 - **Action:** Increase number of successful patents and commercial developments.
 - **Action:** Increase the quality and number of graduated MS and PhD students.
 - **Action:** Provide high quality, state-of-the-art research facilities and equipment.
- **Objective 2:** Implement strategic research initiatives.
 - **Action:** Provide resources for multidisciplinary initiatives that combine College and University strengths.
 - **Action:** Investigate multiinstitutional, including international, research opportunities.
 - **Action:** Establish research forum for exchange of ideas.
- **Objective 3:** Increase research activities with industry.
 - **Action:** Expand contacts with targeted industries.
 - **Action:** Stimulate long-term, mutually beneficial industrial collaborations.
 - **Action:** Create an incentive for faculty to collaborate with industry.
- **Objective 4:** Improve the reputation of the College.
 - **Action:** Implement a systematic outreach and marketing process.
 - **Action:** Accurately communicate the College's value to constituencies at the state, national, and international level.
 - **Action:** Utilize emerging communications technologies and activities to inform, persuade, and engage constituents.

Goal 3: Become a more valuable asset to the profession, the state, and the University.

- **Objective 1:** Increase active faculty and staff involvement in professional organizations.
 - **Action:** Nominate and facilitate faculty and staff involvement to serve in professional society committee assignments.
 - **Action:** Increase faculty and staff participation in organizing sessions and symposia in national conferences.
 - **Action:** Nominate faculty and staff to serve on policy-making boards, commissions, and journal editorial boards.
 - **Action:** Encourage faculty to serve as program directors in funding agencies.
- **Objective 2:** Increase the College's interaction with business and industry.
 - **Action:** Form departmental and research center advisory boards with predominant industry participation.
 - **Action:** Increase number of invited speakers from industry to the College.
 - **Action:** Establish short-term industrial visiting and adjunct professorships.
 - **Action:** Establish short-term faculty and staff appointment opportunities in industry.
- **Objective 3:** Increase the College's interaction with the public and the government.
 - **Action:** Increase participation of faculty and staff in public and governmental relations activities.
 - **Action:** Increase participation of faculty, staff, and alumni in student recruitment.
 - **Action:** Increase dissemination of College information.
- **Objective 4:** Increase participation in selected service activities within the University.
 - **Action:** Nominate members for Faculty Senate and Faculty and Staff Councils.
 - **Action:** Organize interdisciplinary symposia and lectures.
- **Objective 5:** Increase participation in leadership roles in College activities.
 - **Action:** Increase faculty participation in curricular committee activities.
 - **Action:** Increase faculty and staff participation in College policy-making committees.

Goal 4: Attract, develop, and retain a high quality faculty and staff.

- **Objective 1:** Develop a diverse body of distinguished faculty.
 - **Action:** Provide competitive salaries and start-up packages to new faculty.
 - **Action:** Provide competitive compensation to current faculty.
 - **Action:** Ensure timely advancement of faculty to tenure and promotion.
 - **Action:** Recognize faculty with awards, endowed professorships, and chairs.
 - **Action:** Establish appropriate rank criteria for adjunct faculty.
 - **Action:** Provide an effective incentive or recognition system for adjunct faculty.
 - **Action:** Improve interaction of faculty with staff and students.
- **Objective 2:** Develop a highly competent staff.
 - **Action:** Provide competitive compensation.
 - **Action:** Facilitate timely promotion and stimulating career development for all staff.
 - **Action:** Establish an award system to recognize staff contributions.
 - **Action:** Improve interaction of staff with faculty and students.
 - **Action:** Investigate need for a research faculty track.

Goal 5: Acquire and effectively manage resources to enable growth of the College to meet the increased demand for engineers.

- **Objective 1:** Implement a growth plan consistent with available space and expected increase in enrollment.
 - **Action:** Develop a financially justifiable growth plan.
 - **Action:** Develop and receive approval of a business case to increase size and diversity of faculty and staff.
 - **Action:** Establish resource allocation plan consistent with College priorities and departmental growth.
 - **Action:** Develop an enrollment management plan that includes recruitment, retention, and graduation targets for a diverse and appropriately sized body of high quality students.
 - **Action:** Determine future focus areas for the College and attract faculty and assign resources accordingly.
- **Objective 2:** Increase gifts as part of the University comprehensive campaign to attract and retain the best faculty and students.
 - **Action:** Acquire funding to retain faculty within the College and to help in the recruitment of new and distinguished faculty in targeted academic areas.
 - **Action:** Acquire funding to recruit top undergraduate and graduate scholars.
 - **Action:** Acquire funding to support and develop innovative programs of national distinction.
 - **Action:** Increase alumni and corporate support for annual Engineering Excellence Fund.
- **Objective 3:** Acquire additional (non-gift) financial resources for the College.
 - **Action:** Conduct a situational analysis to identify potential sources of non-gift income (e.g., workshops, short courses, royalties, student design projects, computer, and other fees).
 - **Action:** Develop and implement a plan to increase non-gift financial resources.
- **Objective 4:** Leverage the College and University resources to effectively support the vision of the College.
 - **Action:** Identify and build logical relationships into a cohesive network among faculty, staff, alumni, University units, and other public organizations.
 - **Action:** Identify and connect parallel initiatives with combined College and University resources.

IV. IMPLEMENTATION

Voting faculty approved The College of Engineering 2000-2005 Strategic Plan and Metrics on May 10, 2001.

Primary responsibility for overall implementation of the College Strategic Plan lies with the Dean. The Dean will, in consultation with the Engineering Administrative Council and appropriate faculty members or representatives, make resource decisions that are consistent with the plan.

Strategic planning will be an ongoing, open, and participatory process involving faculty and staff of the College. The Strategic Planning Committee, under leadership of the Dean, will review the plan at least annually, ensuring consistency between the College and the University. In conjunction with this, the Committee also will review annual progress reports from the College, departments, and research units. In addition, the Committee will propose modifications to the College plan, as appropriate, and will carry such proposals through appropriate faculty approval stages.

The Dean will prepare an annual progress report for the faculty and staff that includes a comparative summary to prescribed plan metrics.

The Strategic Planning Committee includes:

- P. Barry Butler, Dean
- Gary W. Fischer, Associate Dean
- A. Jacob Odgaard, Associate Dean
- Krishnan B. Chandran, Biomedical Engineering Departmental Executive Officer
- Alec B. Scranton, Chemical and Biochemical Engineering Departmental Executive Officer
- Robert Ettema, Civil and Environmental Engineering Departmental Executive Officer
- Jon G. Kuhl, Electrical and Computer Engineering Interim Departmental Executive Officer
- Wilfrid A. Nixon, Industrial Engineering Interim Departmental Executive Officer
- Jeffrey S. Marshall, Mechanical Engineering Departmental Executive Officer
- Soura Dasgupta, Chair, Engineering Faculty Council
- Virendra C. Patel, Director, Iowa Institute of Hydraulic Research
- Kyung K. Choi, Director, Center for Computer-Aided Design
- Lea-Der Chen, Director, National Advanced Driving Simulator
- John M. Wiencek, Professor of Chemical and Biochemical Engineering
- Fred W. Streicher, Director of External Relations

V. STRATEGIC PLAN METRICS

The following pages list a series of Metrics for the Strategic Plan. Note that each Metric has been related to a specific goal(s) contained in the Strategic Plan. The baseline for Metrics is Academic Year 1999-2000, except where noted.

**COLLEGE OF ENGINEERING STRATEGIC PLAN METRICS
ACADEMIC YEARS 2000-2005**

Goal	Metric	Baseline (1999-2000)	College Target (by 2004-2005)
1, 2, 3, 4	Number of ranked programs-US News & World Report	55 th	Within top 50
1	Percent of students in experiential learning (e.g., co-ops, internships, and faculty mentored research) *	50%	80%
1	Percent of students in "Writing Across the Curriculum"	0%	100%
2	Number/funding of research applications	238/\$20.63 million	304/\$26.33 million
2	Number/funding of research approvals	151/\$10.13 million	193/\$12.93 million
2	Faculty productivity/year		
	Research expenditures per faculty	\$233,000	\$297,374
	Refereed publications per faculty	**	**
	Number of total MS and PhD students graduating per faculty per year	0.91	1.6
2	Number of national/international faculty awards	10	15
2	Percentage of faculty receiving external funding	81%	85%
2	Number of interdisciplinary projects ***	37 (2001)	43
2	Number of corporations supporting research programs	43 (2000)	55
2	Number of programs in National Research Council rankings	1 program in top third	Next NRC report scheduled to be published in 2005, based on 2003 data. The strategic planning time is too short to make an improvement by 2003. After 2005, next planned report scheduled to be published on 2013 data.

* Metric is defined as % of students who participate at least once during their undergraduate studies.

** Baseline and target will be determined upon completion of FAS database project.

*** This is interpreted as funded research involving co-investigators outside the College.

**COLLEGE OF ENGINEERING STRATEGIC PLAN METRICS
ACADEMIC YEARS 2000-2005 (CONTINUED)**

Goal	Metric	Baseline (1999-2000)	College Target (by 2004-2005)
3	Engage professional advisory boards in all departments and research centers/institutes	4 of 6 departments 2 of 3 centers	6 of 6 departments 3 of 3 centers
3	Faculty involved in organizing sessions, serving on policy-making boards and editorial boards	50%	85%
4	Number of minority and female tenure-track faculty	5% women 35% minority (African-American, Hispanic, and Asian)	>5% women > 30% minority (African-American, Hispanic, and Asian)
4	Number of minority and female professional and scientific staff	14%	>14%
4	Percent of faculty and staff participating in professional development activities	90%	100%
4	Percent of faculty and professional and scientific staff receiving an annual performance evaluation	Faculty 100% P&S staff unknown	Faculty 100% P&S staff 100%
5	Student enrollment by level (undergraduate/graduate)	1,103/316	1,500/400
5	Number/\$ of annual giving	1,607/\$2.3 million	2,000/\$6.3 million (per year for each of five years)
5	Replacement cycle time of computers and information technology equipment	4-year	3-year
	Number FTE	80	100

IV. PROFILE

The College of Engineering is one of 11 colleges that comprise The University of Iowa. With educational courses dating back over 100 years, the College today has an enrollment of about 1,400 students -- 1,100 of whom are undergraduates. About 70 percent of undergraduate students come from the state of Iowa, with another 21 percent attending from contiguous states. Women make up 26 percent of undergraduates—considerably higher than the national average of 19%.

The College teaches undergraduate and graduate coursework in biomedical, chemical and biochemical, civil and environmental, electrical and computer, industrial, and mechanical engineering. The Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) has accredited all University of Iowa undergraduate engineering programs.

The college stands out among many other engineering schools, in part, because all six Departments have major teaching and research linkages to the University's Health Sciences colleges (Medicine, Pharmacy, Dentistry, Nursing and Public Health) -- including shared courses, collaborative research, and joint faculty appointments.

Engineering at Iowa is especially recognized for its small, personalized size and focused mission—coupled with the resources of a large research university. The College is ranked among the top 25% of graduate colleges of engineering in the nation.

Superior Student Quality

Many of our students come to The University of Iowa because they know with confidence that they want to become engineers, but they want to be something more. At Iowa, they can combine engineering with the University's strong liberal arts focus—with natural strengths in international studies, writing and communications, health sciences, business, law, arts and humanities. This makes The University of Iowa uniquely qualified to provide talented students the type of broad technological education demanded in a rapidly changing world. For example, the College is the first in the U.S. to offer a Technological Entrepreneurship Certificate with an engineering degree. In its fifth year, the program -- supported by the Colleges of Engineering, Business, Nursing and Medicine -- is designed to open engineering students' eyes and minds to the economic value of their profession and to encourage entrepreneurial spirit.

In addition, the College enjoys a considerable number of additional characteristics that make it attractive to talented students, faculty, researchers, and corporate employers:

- The average ACT score of incoming students is consistently above the 90th percentile level nationally.
- Engineering students (5% of total university enrollment) are awarded over 20% of the top University first-year student merit scholarships.
- The College is third in the U.S. in producing Tau Beta Pi national engineering honor society graduate scholarship winners since 1980. No other public university has produced more.
- Engineering students have earned the top University of Iowa Hancher-Finkbine Medallion for achievement and leadership upon graduation in 15 of the past 24 years.

- 97% of seniors who take the Engineering Fundamentals exam pass—among the highest in the U.S.
- The College's undergraduate biomedical engineering program is one of only 21 accredited biomedical and bioengineering undergraduate programs in the U.S.—and the only one accredited in the state of Iowa.
- The College houses its own Student Development Center—a synergy of admissions, registrar, academic advising, and career services offices. Students are experiencing a very strong job market, based on their talents and their education at The University of Iowa. More than 600 companies and agencies now recruit our students annually.

Faculty Teaching and Research Excellence

Our faculty members are both classroom- and research-focused. Over 86% of our undergraduate courses in engineering (counting lectures and discussion sessions) are taught by tenure and tenure-track faculty. Engineering faculty spend more time preparing for and teaching undergraduate classes than any other college at the University.

The College of Engineering excels nationally and internationally in several specialty and interdisciplinary research areas. Students work very closely with faculty on computer-aided design and simulation, human factors research, hydraulics, environmental health solutions, biomedical research, among many other areas. The College has an established global reputation for its three formal research units—the Center for Computer-Aided Design, the Iowa Institute of Hydraulic Research, and the Iowa Spine Research Center. In addition, College faculty are involved in several University interdisciplinary research units, such as the Biotechnology Byproducts Consortium, Center for Biocatalysis and Bioprocessing, Center for Global and Regional Environmental Research, Center for Health Effects of Environmental Contamination, Institute for Rural and Environmental Health, National Advanced Driving Simulator, and the Public Policy Center.

The University of Iowa prohibits discrimination in employment and in its educational programs and activities on the basis of race, national origin, color, creed, religion, sex, age, disability, veteran status, sexual orientation, gender identity, or associational preference. The University also affirms its commitment to providing equal opportunities and equal access to University facilities. For additional information on nondiscrimination policies, contact the Coordinator of Title IX, Section 504, and the ADA in the Office of Affirmative Action, (319) 335-0705 (voice) and (319) 335-0697 (text), 202 Jessup Hall, The University of Iowa, Iowa City, Iowa 52242-1316.

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