CoE Strategic Plan – Winter 2009

Our Mission: We are a diverse community of innovators working to dramatically improve the quality of life in our state, our nation, and the world. We do it by leading in engineering discovery, innovation, education, and engagement.

In the last century, engineering dramatically improved the quality of life and helped create our modern economy. Even before the information-technology (IT) revolution, studies found that technological innovation had resulted in as much as 85% of growth in US income per capita (NAE Report - Rising Above the Gathering Storm).

But engineering is much more than an economic engine. It also can address societal problems such as the environment, energy, and health. A modern engineering college must not only supply the math, science, and engineering fundamentals needed for professional practice, but it must also provide students with the tools needed to solve the grand challenges facing us today.

More than a decade ago, it became clear that “bio-info-nano” principles would emerge as core disciplines in the new century, complementing traditional engineering disciplines developed over the previous century. The College of Engineering (CoE) at the University of Washington (UW) recognized this trend and has become a world leader in these areas. We receive more research funding from the National Institutes of Health than any other engineering college (bio). Our Computer Science & Engineering program is widely regarded as top five, and UW was recently recognized as one of the most innovative IT universities in the US (info). Finally, UW is one of only 13 institutions comprising NSF’s National Nanotechnology Infrastructure Network (nano). The CoE is strategically positioned to be a preeminent player in 21st century technologies.

Building on these strengths, the CoE must address some of society’s greatest issues while preparing students not only to fill the jobs of today, but to create the jobs of tomorrow. Research and education programs will tackle grand challenges, such as the environment, health, energy, and information. By integrating new and old disciplines across traditional boundaries, and working with strong allies such as the College of Arts & Sciences, several schools in the Health Sciences, and the new College of the Environment, we will create sustainable technologies for the future and produce graduates who can translate these technologies into solutions.

A first-rate education is required to prepare our students and graduates to further these frontiers. Over the next 5 years, our primary goal is to raise the CoE’s national and international visibility as an engineering leader. To this end, we must engage both our local community in the State of Washington and strategic partners around the world. We also must build diversity into every aspect of our community, and improve the overall quality of our educational experience.

5-Year Plan

Goal 1: Increase the number of top students in CoE programs, and develop them into top candidates for industry and academics who have the dynamism, flexibility, and agility to meet rapidly changing global challenges.

- Increase annual BS degrees from 720 (current 5-year average) to 800 (11% growth).
- Increase percentage of freshmen in the CoE from 10% (current 5-year average) to 25%.
- Increase annual MS degrees from 320 (current 5-year average) to 400 (25% growth).
• Increase annual PhD degrees from 100 (current 5-year average) to 140 (40% growth).
• Improve student quality in all degree programs (Metrics – Incoming GPA, % going on to grad school, job placement).
• Improve student learning and the overall quality of the student experience; improve lifelong learning skills of graduates.
• Increase student diversity. In particular, increase female BS graduates from 19.3% to 23% and URM BS graduates from 5.9% to 8.0%. Maintain female MS graduates at 25% and increase URM MS graduates from 4.5% to 7%. Maintain female PhD graduates at 28% and increase URM PhD graduates from 2.8% to 5%.

Goal 1 Methods:
• Grow degrees primarily through State of Washington “high demand” funding.
• Increase faculty count from about 215 to 240-250 (14% growth).
• Increase number of freshmen entering the CoE by “owning freshmen.” Conduct early outreach through high school advisor network, Engineering House, and active advising of pre-engineers.
• Improve engineering student learning, the quality of the student experience, and lifelong learning skills by introducing and reinforcing design earlier in the program and by expanding undergraduate student participation in co-curricular programs/projects (such as research, international exchange, service projects, co-ops, and industrial internships).
• Implement an ongoing assessment process to monitor the quality of the student experience (for example, using the National Survey of Student Engagement).
• Grow MS degrees primarily through integrated 5-year BS/MS programs and professional MS programs.
• Grow PhD degrees by increasing faculty count and average funding per faculty member.
• Provide incentives to acquire more graduate training programs enabling growth of PhD programs, especially in interdisciplinary areas.
• Increase student quality primarily by expanding scholarship and fellowship funds available to all departments.
• Improve student diversity via targeted pathway programs managed by EADC, MESA, and other partners, as well as targeted financial support and scholarships for promising women and URM incoming students.

Goal 2: Strengthen faculty and staff quality through enhanced recruitment, retention, professional development, rejuvenation, and separation approaches.
• Improve faculty recruitment and retention by increasing endowed chairs and professorships from 20% to 30% of total faculty count. Also, increase faculty recognition through awards and “Collegiate Professorship” programs.
• Increase faculty diversity. In particular, increase female faculty from 18% to 20% and URM faculty from 3% to 5% of total faculty.
• Enhance job quality and work-life balance for faculty and staff.

• Increase opportunities for faculty development with teaching workshops, one-on-one consulting, and other resources (e.g., CELT) related to engineering teaching excellence.

**Goal 2: Methods:**

• Build "case" and cultivate donors for endowed positions.

• Ensure that women and URM faculty have equitable representation of endowed positions.

• Provide more secure funding for the Center for Engineering Learning and Teaching (CELT) to support teaching excellence.

• Improve professional development and career advancement opportunities for staff.

• Enhance programs such as partner hires and parent teaching release. Expand daycare.

**Goal 3: Demonstrate national leadership in research by creating 3 major engineering centers led by UW-CoE.**

• Incent both top-down (e.g., Molecular Engineering – MolE) and bottom-up (e.g., Experimental Computer Engineering Lab – ExCEL) approaches to new center creation.

• Increase median research expenditures from about $165k per faculty member to more than $200k per faculty member (over 20% growth).

• Increase industrial funding from 2.5% to 5.0% of total research expenditures and translate innovations to the public domain through robust tech transfer.

**Goal 3: Methods:**

• Focus faculty recruitment on 3-5 initiatives helping define 21st century engineering.

• Develop "complete" and meaningful global partnerships with 3 international institutions.

• Provide training grant and center proposal coordination at the college level.

• Partner closely with UW Tech Transfer to develop best practices enabling larger scale research agreements with industry (e.g., current Boeing and potential Intel agreements).

**Goal 4: Develop a world-class infrastructure attracting top students, faculty, and center-based activities to UW.**

• Build world-class shared facilities enabling a nimble response to new teaching and research opportunities. In particular, increase research space by 60,000 asf.

**Goal 4: Methods:**

• Maximize MolE Building by developing specific fundraising strategies for individual, corporate, and foundation donors; build "case" and cultivate prospective donors.

• Aggressively pursue research space outside the traditional engineering footprint (e.g., Hall Building, Sand Point, UW Tower, and South Lake Union).

• Explore feasibility, build "case", and cultivate donors for "Engineering Commons" and for additional research and teaching space related to IT.