

College of Engineering Academic Assessment Plan, 2003-2008

1. *Description and overview of the school/college or unit*

The College of Engineering houses 8 academic departments, which offer 12 undergraduate degree programs, 21 masters degree programs, and 14 doctoral programs. First-year undergraduate students enter the college via Pre-Engineering, a unit of the Office of Academic Affairs, and then apply to a degree program. The college accounts for approximately 10% of the students on campus; we have roughly 4500 students registered in the college: roughly 3500 of them in undergraduate programs and about 1000 of them in graduate programs.

The Biological Systems Engineering Department, which offers BS, MS, and PhD degrees, is located in the College of Agriculture and Life Sciences, but cooperates with the COE on such issues as student recruiting, curriculum planning, assessment, and accreditation.

2. *Administrative structure for assessment, including external forces such as accreditation.*

Resources for assessment, audiences for assessment also could fit here.

Each department in the college has an assessment representative and/or an assessment committee, which is responsible for setting the department's priorities and plans related to assessment. In some cases, this committee overlaps with the curriculum committee. Administrative staff in most departments assist faculty with assessment activities. The associate and assistant deans for academic affairs coordinate efforts across the college and advise departments on their plans and on data collection and analysis.

The college participates in two types of formal external reviews. 1) Each department undergoes a complete program review once every 10 years, conducted by a team of colleagues from the COE and elsewhere on the UW campus. These reviews cover administration, undergraduate and graduate studies, research activity, outreach and strategic planning. Program reviews are conducted under the guidance of the associate dean for academic affairs. Our college dean receives reports of the reviews, which are distributed by the dean to the faculty of the reviewed department who are then asked to respond to their report. Following each internal review an external review is conducted with a committee of three faculty from the respective discipline, from peer institutions chosen by the associate dean of academic affairs. The combined reviews are then shared with the dean of the college of engineering and the dean of the graduate school and action items are developed for improvements in the departments and the major at the undergraduate and the graduate level. Changes are tracked by the college administration and result in alterations to the department strategic plans.

2) The Accreditation Board for Engineering and Technology (ABET) conducts a site visit once every 6 years to review undergraduate degree programs as well as the resources available to support those programs (faculty, classrooms, labs, computer and library facilities, etc.). ABET's accreditation criteria for engineering programs require that each program have published and measurable educational objectives and student outcomes – both established with the input of relevant constituents – and documented assessments of those objectives and outcomes. In addition, ABET requires that programs provide evidence of the use of assessment data to improve the program (i.e., feedback loops). Academic departments are responsible for compiling the necessary program-level assessment and documentation for each ABET visit. The

associate and assistant deans for academic affairs prepare college-level documentation, provide consultation and data to programs, and also coordinate the visits.

In addition to these program reviews and ABET visits, the college and its departments obtain ongoing feedback from advisory boards. Each department has a Board of Visitors (or similarly named group) and the college has an Industrial Advisory Board – board members are active in the engineering profession in some way (via industry, government, academia) and may or may not be UW alumni. These boards meet on campus every 12-18 months and offer assessments and advice related to curricula, research, facilities, management, hiring plans, and more.

3. *Overview of current practice - what you assess and how you assess it. Link to existing reports (but not repeating contents of annual reports).*

The college of engineering is committed to the following mission, objectives, and outcomes.

COLLEGE OF ENGINEERING EDUCATIONAL MISSION:

To educate and prepare men and women to contribute as engineers and citizens through the creation, integration, application and transfer of engineering knowledge.

EDUCATIONAL OBJECTIVES:

The COE recognizes that our graduates will choose to use the knowledge and skills they have acquired during their undergraduate years to pursue a wide variety of career and life goals and we encourage this diversity of paths.

Whatever path graduates choose, be it a job, postgraduate education, or volunteer service, be it in engineering or another field, we have for our graduates the following objectives:

1. That they will exhibit strong skills in problem-solving, leadership, teamwork, and communication;
2. That they will use these skills to contribute to their communities;
3. That they will make thoughtful, well-informed career choices; and
4. That they will demonstrate a continuing commitment to and interest in their own and others' education.

EDUCATIONAL OUTCOMES:

Upon graduation, students shall have the ability to:

- Apply knowledge of math, science and engineering within the major;
- Design, conduct, analyze and interpret engineering experimental results;
- Identify, formulate and solve engineering problems;
- Design a system or process to meet desired needs;
- Function on diverse teams and provide leadership as needed;
- Use the techniques, skills and engineering tools needed for engineering practice;
- Communicate by oral, written and graphic modes;
- Draw on their liberal education to provide knowledge of contemporary issues;
- Recognize the need for and ability to engage in on-going learning;
- Understand professional and ethical responsibility;
- Understand the impact of engineering in our global society.

As noted in the earlier discussion of ABET, each program in the college has adopted its own discipline-specific objectives and outcomes that are compatible with those of the college (and with those laid out by ABET).

The college and its departments formally assess both our “process” (curricula and pedagogy) and our “product” (student learning and achievement). We conduct these assessments using a variety of tools, including concept inventories, course evaluations, capstone design course reviews, exit interviews, exit and alumni surveys, licensing exam results, and advisory board visits. As important as these tools are for stimulating discussion in the college, the data they provide are not the sole impetus for changes to our academic programs. The feedback we receive from students, alumni, industry, and our academic peers provides us with valuable information, but the experience and judgment of faculty and staff are crucial, determining factors in any decisions affecting our students and their education.

4. *Directions for improvement, further development, inquiry, or closing of gaps.*

Since 1999, a variety of developments – including new accreditation criteria, new deans, a new strategic plan, and a major NSF-funded curriculum initiative – have stimulated the introduction of many new assessment activities in the college. Our primary challenge in the coming years, particularly in light of new budget constraints and the changing size of our student body, will be to sift and winnow these activities to determine which are providing us with indispensable information and which are too cumbersome or costly to continue. New assessments may take the place of those that fall by the wayside.

The COE, like the campus, is committed to allowing for variation across departments so that each discipline may select those tools and mechanisms that are most appropriate and useful given their needs, and to ensure that faculty have ownership of their programs and their data. Such diversity presents challenges, however, in terms of coordination and efficiency – it is difficult to create or maintain even an inventory of the assessment activities in the college, much less a coherent overall picture of the findings. Our secondary challenge, then, will be to continue to seek a balance between vitalizing autonomy and sensible interdependence.

5. *Assessment agenda for the future, in about a 5 year time-line (assessment activities or goals for the next five years or so.)*

YEAR	SCHEDULED REVIEWS	COE-WIDE ASSESSMENT ACTIVITIES
2003-04		Review/Update Department Strategic Plans, Goals, Objectives, Outcomes
2004-05	ABET Reviews for ChE, GLE, CMPE, BME	Review/Update Department Assessment Plans
2005-06	Program Reviews for BME and CEE	Preparation/Documentation for Fall 2006 ABET visit
2006-07	ABET Visit and Responses	Review of COE Assessment Plan
2007-08	Program Reviews for ECE and MSE	
2008-09	Program Reviews for EP and ME	Preparation for NCA Accreditation Visit
>2009	NCA Accreditation Visit Program Reviews for ChE and IE (2009-10) Program Review for GLE (2011-12)	