To: Directors of MEng Programs  
From: Rajit Manohar, David Gries and Yoanna Ferrara  
Re: Assessment of Student Learning in the MEng Programs  
Date: 14 December 2010

**Introduction**

Cornell has been engaged in expanding its practices regarding assessment of student learning for a few years now. A Core Assessment Committee, chaired by Vice Provost Laura Brown and consisting mainly of associate and assistant deans from all the colleges and schools, has developed learning outcomes/goals for the university, and each undergraduate college has done the same for their college. Further, each of the undergraduate colleges has a plan for developing good practices in assessment of student learning for each of their majors.

This Fall, the Graduate School committee on Graduate Education Assessment (Associate Dean Sarah Hale, Chair), developed general learning outcomes/goals for MS and PhD and programs, as well as a list of possible assessment tools for them. Early next year, the Graduate School will form a new committee to oversee assessment of student learning in the Graduate Fields, and at least some Graduate Fields will begin developing learning outcomes and assessment tools for their MS and PhD degrees. A plan will be formulated to extend this to all fields.

Please look at the Provost’s webpage for assessment of student learning,

http://www.cornell.edu/provost/assessment/

to see how serious Cornell is about this issue.

**The case for assessing student learning at Cornell**

The Higher Education Act of 1998 placed a great deal of emphasis on outcomes assessment as a *precondition* of Title IV funding (e.g. federal student financial aid). Since then, new versions of the Act have placed greater emphasis on assessment. At the behest of the Higher Education Act, the Middle States Commission on Higher Education (which accredits Cornell) rewrote the standards for accreditation in 2002 to require that institutions assess student learning. Cornell has an accreditation visit in March 2011, and to prepare for it, Cornell has been expanding assessment of student learning practices throughout the university. Note that Cornell would not be doing this if it did not believe that expansion of assessment of student learning in a more systematic manner would be helpful.

We *all* assess student learning in some form or another. We look at how well we did in teaching a course—how well the students learned—and change the course to make it better. We look at how our graduating seniors are doing and change the curriculum and the environment to better meet their needs. For the MEng degrees, we are always wondering whether we have too many or too few students, whether they are getting a good education, and how the MEng program affects our undergraduate and PhD programs. Currently this is an informal process; a systematic handling of assessment can make it more effective.

This new emphasis on assessment of student learning is meant to do two things: (1) Make us all more aware of what we are assessing and why, thus allowing us to do a better job, and (2) Document in a more effective manner the assessments that we do and the improvements we intend to make because of the assessments.

**Assessment of MEng programs**

The Graduate School has completed its initial deliberations and developed learning outcomes/goals for MS and PhD programs, and it is time for each of the MEng programs to do the same. As said earlier, the Middle States accreditation visit is at the end of March. There is no way that each MEng program can be doing assessment by then. However, we have to convince Middle States that we do indeed have feasible plans in place and that work is progressing at a reasonable and steady pace. The rest of this document outlines what has to be done and gives a timetable for it.

**Steps and Timetable**

1. **Now through January 21:** Form a small committee to oversee the development of assessment of student learning for your degree program. This committee will
• Become familiar with the University’s and Engineering College’s learning outcomes/goals, available at:
  http://www.cornell.edu/provost/assessment/learning_outcomes.cfm
  http://www.engineering.cornell.edu/explore/mission-and-goals.cfm

The outcomes for the Engineering College were developed by the College Curriculum Committee (chaired by Assoc Dean Gries) and discussed and approved at CCGB meetings (and in departments).

• Read the attachment, which gives a draft of the learning proficiencies/outcomes/goals for the general MS and PhD degrees developed by the Graduate School.

• Think about some learning outcomes for your field’s MEng program. The January meeting will be used to identify if there are common learning outcomes for the MEng program as a whole.

  (a) The learning outcomes should support the draft learning outcomes of the Graduate School for the MS program (roughly), but should be more concrete, designed for your MEng program.

  (b) You can look on the web to see what other Engineering Masters programs have for outcomes. Some examples available at other institutions include:

  San Jose State: http://www.engr.sjsu.edu/ges/program_assessment_and_wasc/wasc
  Purdue competencies: https://engineering.purdue.edu/ENE/Academics/Graduate/competencies
  UT Arlington, Civil: http://www.uta.edu/gradcatalog/2011/schools/engineering/civil/

2. On January 24 at 8:00-10:00 a.m. in Carpenter 240: We will have a two-hour workshop to discuss learning outcomes for MEng programs. Please make sure at least one person will be there from your program.

3. By end February:

• You should have settled on learning outcomes for the MEng program. These should be placed on the web in a prominent place.

• Develop a timeline for assessment of the learning outcomes (we give some ideas below). If possible, begin assessing an outcome this Spring. If not, start in the Fall. The outcomes do not have to be assessed all at once. Perhaps one or two a year makes sense. But a timeline must be there to indicate that you have thought about it.

Suggestions for assessment

There are at least two ways to do assessment.

(a) Have every course in the curriculum periodically assess its learning outcomes and plan for improvements as appropriate. Then show how these course assessments lead to an assessment of the MEng degree outcomes. This is similar to the ABET accreditation process, is time consuming, and places a large burden on the faculty. Instead, we suggest:

(b) In late August of each year, your Assessment Oversight Committee examines the learning outcomes to be assessed and determines how to assess them (examples below). Once this is done, then during the academic year, conduct the assessment and afterwards evaluate the results and figure out ways to improve. This method puts the main work on just a few people (see examples) and does not require faculty to have to write post-course assessments each year. Also, not all outcomes need to be assessed each year; periodic assessment of each outcome is sufficient.

Examples: (1) Ask some instructors to put a certain kind of question on a prelim or a final that is directly linked to your outcomes; (2) Develop a survey of graduating students; (3) Survey Alumni; (4) Have a town meeting with students; (5) Look at where the students get jobs and what difficulty they had getting jobs; (6) Discuss the outcomes with an advisory committee and get their input; (7) Survey employers of students.