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Memorandum

To: CBE Faculty
From: Assessment Subcommittee (DJK, TWR, RES)
Re: Fall 2004 Assessment Results Summary

Results from the latest assessment tools for the fall 2004 semester have been compiled and evaluated. The current analysis provides conclusions in several areas: overall trends, updates on areas of earlier concern, and new areas to monitor.

Assessment Tool Inputs

The new data available this fall is from the end-of-semester course evaluation input from students in all CBE courses and from co-op/intern supervisors. EBI exit surveys were completed by students graduating in December, but these forms will be included with those collected in May 2005 (for May and August 2005 graduates) and analyzed in the once-yearly comparisons conducted by EBI in June-July 2005. Looking at the Assessment calendar, many more inputs (EBI survey, Visiting Committee, Summer Lab Oral Evaluations) will be available in fall for a more diverse review.

Course evaluation outcomes assessments provide general feedback on how students perceive their competence in the departmental program outcome areas. As usual, ratings are high in many courses (10 or more of the 14 rated) for the hard, technical skill areas:

a – apply knowledge of math, science and engineering,
e – identify, formulate and solve engineering problems,
l – engineering topics,
and also i – lifelong learning.

New this year is finding 'h – global and societal impact' and 'j – knowledge of contemporary issues' also at or above target in 10 courses.

Expected low scores (6 or fewer) are for topics only covered in a few classes. These items are at target levels in the courses that do have the described focus.

b – ability to design and conduct experiments, and to analyze and interpret data,
c – design a system, component or process

Design skills were rated highly in CBE 450, as desired, along with 250, 426, 270, and 540.

Lowest scores (6 or fewer courses) are in:

d – ability to function on multi-disciplinary teams,
f – professional, ethical responsibility,
g – communicate effectively,

j – knowledge of contemporary issues.

Communication skills did receive high scores in the lab courses (CE 324, 450) as well as the courses with substantial projects (CBE 426 and 540), and this indicates that the coverage is at the expected level for semester courses. Outcome h – global and societal impact is achieving target levels in 8 courses, and improving. Outcomes f and j will continue to need extra attention.

Co-op and intern evaluations were very good for summer and fall 2004. For review, the rating forms collect comments as well as ratings of 'exceeds expectations,' 'met expectations,' 'below expectations,' or 'not available' (EE, ME, BE, or NA) for each ABET outcome a-k and for overall performance. In summer 2004, overall ratings indicated that 11 students exceeded expectations and 3 students met expectations. The ratings in the individual ABET a-k listings were mostly EE or ME, with a few NA scores. One student received 'below expectations' ratings in criteria a and e, indicating overall weak technical skills, but was rated 'meets expectations' overall. One other rating of BE was received in category g-3 (communication skills-oral). In fall 2004, the overall ratings were 3 'exceed' and 4 'met' for a similar positive result. However, two students did receive 'below expectations' ratings in one specific ABET criterion each: e (ability to identify, formulate, and solve engineering problems), and g-1 (communication – interpersonal skills). Concern on these two students has been returned to their advisors, and they will be watched in upcoming semesters to determine the depth of problems and what remedial actions may be needed. Other students received ratings of ME or EE in these areas, so this does not seem to be a general problem with the course of instruction.

Follow-up on Areas of Previous Concern

Our students continue to be rated highly for technical expertise. Assessment in the 'softer' areas continue to lag.

Four areas are currently being monitored: 1) physics courses, 2) multidisciplinary teams, 3) oral reports, and 4) "understanding the impact of engineering solutions in a societal/global context." Current assessment tools provide no new inputs into the physics issue. This remains a college-wide problem, and will be a continuing concern for the APCRC working group.

Team-related feedback places this topic still at the target level. Additional efforts will be needed to increase the positive impact of course projects in the several courses using them.

Oral communication skills are not treated separately in the course evaluation. Communication is rated lower in general, but is recognized in the courses where it receives significant attention. The ratings in the co-op/intern evaluations are satisfactory to strong, so our employers are satisfied with current levels. We will get more data to evaluate this from the EBI Exit Survey and the CBE 424 evaluations this summer.

The global/societal impact item (h) is at acceptable levels in this evaluation. We will continue to monitor it.

New Areas to Watch

No new weaknesses in outcomes assessment are apparent in these inputs. Our only concern is that several early courses continue to have very low achievement of target levels. We

question whether there can be improvements in these courses in connecting with department program outcomes, or if it is unrealistic for them to contribute at this early stage. If the latter is true, then it may be more appropriate to remove them from the collection of activities being monitored.

Action Items

- consider increased opportunities for team project training and practice
- identify increased opportunities for oral presentation training and practice.