ABET 2012 and the Technical Communication Program

Background on the Role of the Technical Communication Program in ABET

ABET is the accreditation board for engineering programs, and this board will be (re)-accrediting twelve of our undergraduate (Bachelor of Science) programs. There are many reasons why a degree from an accredited engineering program will be valuable to students, but among the best reasons is that it can be difficult to get a Professional Engineering license without a degree from an accredited institution. Accreditation can help when a student applies to graduate school, and it can help enhance a student’s job prospects. Parents look for accreditation when they are advising their high school students about prospective colleges, too.

We have twelve undergraduate programs that are applying for re-accreditation, and those programs have already submitted their self study reports to the ABET evaluators, who will be coming to campus November 11-13 for discussions with faculty. Technical Communication has played an important role in the ABET assessment process, and this document is a summary of our findings.

The Role of EPD 397 (Technical Communication) in CoE ABET Assessment

The ABET evaluators may be interested in talking with EPD 397 instructors, particularly because EPD 397 assessment data and analysis have been used in every undergraduate engineering program’s self study here. Since our Technical Communication course is a requirement for most of the engineering programs in the College of Engineering, it makes sense that we are involved in the assessment of communication, teamwork, ethics, and other skills that we develop in our required courses.

The evaluators will be provided with EPD 397 binders that include the CoE Faculty survey we conducted in 2009, the Alumni Survey we conducted in 2010, and the minutes from our Industrial Advisory Board meetings in which we discussed rubrics and performance indicators. We have used all of this information in creating and refining the rubrics that many of us now use in EPD 397 to assess student performance.

We have provided data to our undergraduate programs to show how our students have performed in the following ABET Student Outcomes:
ABET Student Outcomes Assessed in EPD 397

d. an ability to function on multi-disciplinary teams;

f. an understanding of professional and ethical responsibility;

g. an ability to communicate effectively;

h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;

i. a recognition of the need for and the ability to engage in life-long learning; and

j. a knowledge of contemporary issues.

Our grading rubrics for EPD 397 show "Performance Indicators" that help us measure each of these broadly stated ABET Student Outcomes. ABET did not dictate the performance indicators that we use; we developed them ourselves with input from the constituents mentioned above. A representative selection of EPD 397 instructors submitted grading rubrics from which we generated data for Fall 2011 and Spring 2012 analysis.

The upshot of our assessment from both semesters was that overall our students are meeting or exceeding our expectations. However, our analysis flagged any performance indicators where 15% or more of our students were “not meeting expectations”; it should be carefully noted that if a student “does not meet expectations” on a particular performance criterion, it does not mean that the student failed the course, and it does not mean that the student necessarily failed an assignment; it means that for that particular criterion, the student was below what we would expect to see (meaning the student did work at the BC level or below for that criterion). Here are the performance indicators that continue to challenge our students, according to our data:

Within the context of a Technical Report, the student
• Weighs possible consequences of project recommendations;
• Explicitly considers any global, economic, environmental, and social considerations that may constrain analysis, solutions or recommendations;
• Analyzes consequences of project recommendations: demonstrates understanding of impacts on others;
• Provides effective structure and organization in a written document (macro and micro-level organization).

Within the context of a Technical Presentation, the student
• Provides appropriate text and meaningful headings on slides; minimizes bullets and controls information on the slide.

Students did well with all of our other performance indicators, but in the areas listed
above, more than 85% of students did not meet expectations. We have analyzed data from both Fall 2011 and Spring 2012 to reach these conclusions. In the fall semester last year we did see some performance indicators with challenges within student outcomes d (teamwork) and i (lifelong learning) above, but those problems did not appear as significant in the Spring data analysis. What we have now is a baseline of assessment data, and we will continue to monitor these performance indicators on a regular basis. We will rotate our analysis so that instructors are responsible for supplying data every 2 years.

Continuous Improvement in Technical Communication

Part of our continuous improvement story in Technical Communication over the past six years has been our effort to develop appropriate performance indicators through engagement with faculty, industrial advisory board members, and alumni; we have also used our rubrics to attempt to align our own expectations for EPD 397, combating some of the problems we have had over the years with differences between the different instructors of EPD 397. ABET has helped our program work toward better connections with senior design faculty, since many senior design faculty adopted several of our performance indicators for their ABET data collection purposes. The online modules we began developing in 2009 are also helping align expectations with engineering faculty.

Our role in the ABET data collection process has enhanced the visibility of our program, because the engineering department chairs and ABET representatives have now carefully reviewed the analysis that we have provided for all six outcomes, and they are using our data in their documentation and reaccreditation process.

Instructors in the program who teach any required course, whether it is EPD 155, EPD 275, or EPD 397, will benefit from awareness of the continued challenges noted in our data analysis. The good news is that most of our students do well with the extensive coaching in communication that we provide. The data analysis does not warrant any significant change to how we are teaching our students, but we will be talking about effective strategies for emphasizing the criteria where we see some challenges. Of course, it is clear that Tech Comm cannot be alone in teaching and monitoring student outcomes d, f, g, h, i, and j; we plan to continue to build on our existing collaboration with senior design faculty, particularly through our online modules and rubrics, for reinforcement of some of these skills.

Sample Materials for the Binders

Our EPD 397 binders (which will be available to individual engineering program evaluators) will include the data described above along with sample reports that several of our instructors submitted from EPD 397, plus DVDs with technical presentations from EPD 397 and rubrics assessing that work.
We will be placing a binder for EPD 155 (Basic Communication) sample materials in the general College resource room. Many thanks to the instructors in the program who have contributed to the assessment effort.