Assessment Grants

Application Form for 2008–2009

The name of the project: **Developing Performance Criteria and Assessment Rubrics for the Computer Engineering and Software Engineering Programs**

The dollar amount requested from Assessment Grant funds: **$5,000**

If the department intends to provide matching funds, please include the total dollar amount of matching funds. Otherwise leave this blank: **TBD, as appropriate, for workshops and conferences.**

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The goal of the project: (1) Using constituent input, establish performance criteria for a small number of ABET Program Outcomes in the BS Computer Engineering and BS Software Engineering programs. (2) Establish rubrics by which degree of achievement of the same Program Outcomes can be measured.

Project abstract:

While both ERAU-DB Computer Engineering and Software Engineering have had two successful accreditation visits under ABET's Engineering Criteria 2000 (pending Engineering Accreditation Commission action this coming July), it is unlikely that we would be reaccredited in 2013 since our assessment process lacks clear performance criteria and processes by which to determine level of accomplishment. Our process needs revision to incorporate determination of performance criteria based on direct measurement of student performance. The proposed project will use constituent input to determine which aspects of selected Program Outcomes are most important to assess, develop rubrics to assess those identified aspects, and articulate performance criteria using those rubrics as a measure of Program Outcome achievement. If successful, the approach may be extensible to other programs, both internally and externally.

Objective of the project: See abstract.

Participants:

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Description of the project:

The proposed activity is a pilot project (1) to establish performance criteria for a small number of ABET Program Outcomes in the BS Computer Engineering (BSCE) and BS Software Engineering (BSSE) programs and (2) to establish rubrics by which degree of achievement of the same Program Outcomes can be measured.

The Department of Computer and Software Engineering assessment process was initially adopted in the 1999–2000 academic year and has been revised annually since. The process, used for ABET Program Outcomes[1] assessment, annual assessment as part of University SACS reaccreditation processes, and department internal quality control, involves annual assessment of identified program outcomes in multiple indicator courses. Faculty members assess achievement of program outcomes from "awful" (1) to "excellent" (5) and report confidence in the degree of assessment based on artifact availability to support the assessment from "no artifact" (0) to "artifacts completely linked to outcome" (5).[2] Individual assessments are discussed in an end-of-academic-year assessment meeting, at which achievement of each Program Outcome is determined by consensus. The process was successfully used in initial ABET accreditation visits in fall 2002 (BSCE), fall 2004 (BSSE), and in recent reaccreditation visit for both in fall 2007 (pending approval at the Engineering Accreditation Commission July 2008 meeting).

My recent participation at the 10th annual ABET Best Assessment Process Symposium (Atlanta, 25–26 April 2008) led me to believe that our assessment process will not be adequate for ABET purposes at our next visit (2013). ABET is moving towards requiring establishment of *performance criteria* based on *direct assessment* of student work. While direct assessment can take many forms, the trend seems to be toward review of specific student work using rubrics to determine degree of Program Outcome achievement.

To achieve the first component of the project, a subset of Program Outcomes will be identified for which performance criteria will be established. Aspects of those Program Outcomes will be identified, and then program constituents will be consulted to determine which three aspects are most appropriate to measure. To achieve the second component of the project, specific student work in existing indicator courses that can be reviewed for achievement of the selected Program Outcomes aspects will be identified, and rubrics to assess degree of achievement in those selected aspects will be developed and tested in time for use during the next annual assessment (May 2009).

As well as the performance criteria and rubrics for determining degree of achievement, completion of the project should yield lessons learned that can be applied to development of performance criteria and assessment rubrics for the remaining Program Outcomes, as well as applicability of the approach to other programs (possible publication).

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[1] In ABET lingo, Program Educational Objectives are "the career and professional accomplishments that the program is preparing graduates to achieve," and Program Outcomes are "what students are expected to know and be able to do by time of graduation." Program Educational Objectives are determined by consultation with program constituents. For the BS Computer Engineering and BS Software Engineering programs, constituents have been identified as employers of program graduates, and program alumni.

[2] See, Wilson, Timothy A. (2007), "Use of indicator courses in program outcomes assessment." *Proceedings* of the 2007 American Society for Engineering Education Southeast Conference, for a description of the process as it stood several years ago.

Timeline:

July 2008 – September 2008:

- Identify Program Outcomes for which performance criteria are to be developed
- Research and education regarding identifying Outcome aspects for assessment
- Identify aspects of each Program Outcome that might be independently assessed

October 2008 – December 2008:

- Consult program constituents to determine three aspects most appropriate to assess
- Research and education regarding rubric design

January 2009 – March 2009:

- Development of rubrics to assess achievement of Program Outcome aspects
- Draft performance criteria for selected Program Outcomes

April 2009 – June 2009:

- Test aspects, rubrics, criteria during annual assessment process
- Assess project according to assessment plan
- Report test results
- Identify lessons learned
- Draft plans for applicability of project results

Assessment plan

Expected project outcomes: (a) Identification of aspects of selected Program Outcomes that can be assessed using rubrics based on recurring student work; (b) development of rubrics for assessing the identified aspects; (c) performance criteria for achievement of the selected Program Outcomes utilizing results of the rubrics.

How project outcomes align with overall student learning outcomes and desired program outcomes: Appropriately chosen Program Outcome aspects should facilitate identifying areas where each program can be improved.

Determination of success of each project outcome: Success is binary: Aspects are either identified or not; rubrics are either developed or not; performance criteria are either articulated or not.

Assessment instrument: The assessment instrument for this project will be a text report describing the identified aspects, developed rubrics, and articulated performance criteria.

Individual responsible for collecting assessment data: Tim Wilson

How data will be used for continuous process improvement: As noted under the alignment section above, identifying (with the help of program constituents) the most relevant aspects of Program Outcomes should facilitate identifying what most needs improvement in the program.