

Program/Department Assessment Report to Academic Division and Standing Committee on Student Learning Assessment			
Program/Department: Engineering Science A.S. STEM Report Date: 2/28/2011			
Part 2: Current Assessment Cycle			
Program Learning Outcomes	Related Learning Activities	Assessment Methods and Criteria for Success. A ratio in parenthesis refers to the criterion for defining success. See the attached page for the definition of these ratios.	Assessment Timeline
a) By the end of the program students will have developed the skills and attained the certifications required to transfer and succeed at a four year engineering college	<ul style="list-style-type: none"> • Passing the courses required for AS degree • Successful completion of the student success sequence (Engineering Orientation courses) 	<ul style="list-style-type: none"> • Monitor retention from the start of the program to graduation. Success will be defined as 70% of students achieving their goals for entering the program. • Grades in the student success sequence. (70/80) • Selected questions on senior exit survey (4/5) • Monitor success rate at transfer institutions • Alumni surveys 	5/13
b) Design and construct experiments as well as analyze and interpret data.	<ul style="list-style-type: none"> • Design one or more experiments • Analyze the results using appropriate mathematical and computational models • Present the results in a formal lab report 	<ul style="list-style-type: none"> • Faculty will grade the report using a standard rubric. Aggregate scores will be analyzed.(70/80) • Selected questions on senior survey. (4/5) • Selected questions on exit exam (70/80) • Successful completion of PHY 181, PHY 182, and CHM 145 (70/80) 	5/12

<p>c) Demonstrate the ability to analyze the impact of engineering solutions in a global, economic, environmental, and societal context.</p>	<p>The students will write a 4 to 5 page paper analyzing an appropriate topic at the interface of engineering and society.</p>	<ul style="list-style-type: none"> • Faculty will grade the report using a standard rubric. Aggregate scores will be analyzed (70/80) • Successful completion of the General Education requirements for an AS degree at BCC. 	<p>5/13</p>
<p>d) Demonstrate the ability to apply the principles and computational tools of mathematics, science, and engineering to solve a wide variety of engineering problems.</p>	<p>All students will take an <i>exit test</i> prior to graduation (performance on the test does not affect the grades of the individual student). Each question will be multiple choice with two or three questions in each topic area. See the attached page for more information.</p>	<ul style="list-style-type: none"> • Appropriate scores in mastery and competence level outcomes (70/80) • Analysis of aggregate GPA in core math, physics, and engineering courses. (70/80) 	<p>5/11</p>
<p>e) Demonstrate the ability to communicate effectively and function as members and leaders of multidisciplinary teams.</p>	<p>Each student will work as a part of a team to complete a design project and then present that project to an audience.</p>	<ul style="list-style-type: none"> • Faculty will grade the report using a standard rubric. Aggregate scores will be analyzed (70/80) • Selected questions on senior exit survey(4/5) 	<p>5/11</p>

Two key program level assessment tools are proposed. The first is an *exit test* to assess the degree of achievement of outcomes in the technical skills area. This exam would be offered in the last semester of the students second year in the program. Although all students would be required to take the exam, the performance on the test would not affect the grades of the individual students in any course and records of individual student's performance on the exam would not be retained. The goal of the test is to assess the program by assessing the extent to which the students have acquired and internalized the knowledge and skills associated with the various outcomes of the program. Each question will be a multiple choice question with two or three questions in each topic area. The questions would differ from the typical questions found in the individual courses by being more conceptual, intending to test how well the students understand key concepts from across the curriculum.

The second tool is a *senior exit survey*. This survey would be given in the last semester of the students second year in the program. All students would be required to take the survey, but individual responses would not be retained. The purpose of the survey would be to assess the program by gathering student opinion and reflection on how well the program outcomes had been achieved.

Note on criteria for success. The criteria listed below are only estimates, and would have to be revised in the process of developing and testing our assessment tools.

70/80 means success is defined as 70% of the students achieving a grade of 80% or higher.

4/5 means the average student response to a question is 4 on the 5 point scale shown below.

1 = Poor

2 = Fair

3 = Good

4 = Very Good

5 = Excellent