Student Learning Outcomes Check Sheet

(The Construction Engineering program was approved and implemented in 2010. There have been no graduates to date to assess. The program assessment was developed around efforts to validate and enhance the program)

Degree Program Title: Construction Engineering  
Degree Type: Bachelor of Science  
Banner/CIP Code: 14.3301.00

Responsible Program Coordinator/Chair completing this form: Brent Donham

Note: Full narratives for Items 1-4 were submitted 23 February 2012; only the # and brief description of the Student Learning Outcome need to be included in this report.

1. STUDENT LEARNING OUTCOME. To which Student Learning Outcome does this data refer to from your 23 February 2012 report?

   SLO #1: A construction industry advisory board will be established with representatives from regional construction / civil engineering companies.

2. ACHIEVEMENT SUMMARY: FINDINGS & RESULTS. What are the results of the assessment of this learning objective thus far? Be sure to include the semester/year the assessment was conducted; attach any relevant reports, data tables, etc. Please be specific in your descriptions. Indicate the number and percentage of students whose data is reported here. Please note: the percent of students who successfully took a test or passed an oral exam is not an example of assessment findings. The findings must be related directly to a learning outcome.

   Building Information Modeling (BIM) Symposium: The Department of Engineering & Technology hosted a BIM 4 & 5D Scheduling and Project Delivery Platform Symposium on March 2, 2012. The purpose of the symposium was to bring together industry leaders in the emerging field of BIM to highlight this growing movement in the industry. Attendees included industry representatives, faculty, and students. The program culminated with a round table discussion on required knowledge and skill sets for future construction graduates. The new Construction Engineering program was presented and advisory members were solicited.

   Construction Engineering Industry Advisory Board (IAB): The ConE IAB was established and convened April 20, 2012. The board members represented different areas of the construction industry, including heavy civil, building contractors, sub-contractors, facility planners, and BIM. ABET defines Student Outcomes as the skills and knowledge an individual will attain by graduation. The IAB approved the following Student Outcomes:

   - an ability to apply knowledge of mathematics, science, and engineering
   - an ability to design and conduct experiments, as well as to analyze and interpret data
   - an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
• an ability to function on multidisciplinary teams
• an ability to identify, formulate, and solve engineering problems
• an understanding of professional and ethical responsibility
• an ability to communicate effectively
• the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
• a recognition of the need for, and an ability to engage in life-long learning
• a knowledge of contemporary issues
• an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

ABET defines Program Educational Outcomes (PEOs) as something a graduate will achieve a few years after graduation. The IAB jointly developed and approved the following PEOs.

Graduates of the Bachelor of Science in Construction Engineering program at Texas A&M University-Commerce will...
• Engage in life-long growth within the construction profession as evidenced by, but not limited to, continuing education, participation in professional societies and conferences, industry certifications, or graduate education.
• Serve as a catalyst for technology within the construction profession as evidenced by, but not limited to, utilization of industry accepted project controls software, responsibility for developing recommendations for industry accepted systems, or serving as a liaison between company, vendors, and technology user groups.
• Meet professional requirements necessary for engineering licensure.

3. PROGRAM ENHANCEMENT. How has this assessment data been used? Please give examples over the last 3 years. What are the specific mechanisms for communicating results and changing courses, curriculum, learning activities within a course, etc

New Faculty: The Department of Engineering & Technology hired 2 new construction engineering faculty for Fall 2012. The posted education and experience requirements were directly influenced by the IAB and were aligned with the program PEOs (e.g. Working knowledge and/or experience with BIM, Working knowledge and/or experience with LEED and sustainable building materials). One of the new faculty had direct BIM experience while the other new faculty had established research with renewable materials.

Curriculum: Based upon input from the IAB, input from the BIM Symposium, and current market trends, the faculty made the decision to develop a BIM and sustainable materials emphasis for the construction engineering curriculum. Rather than just adding a dedicated course or two, the decision was made to integrate the technology throughout the curriculum in a similar manner to that of a calculator in a mathematics program. The calculator is an integral part of a mathematics program but there is not a dedicated class for the calculator. This new program emphasis is reflected in the second PEO, where graduates are expected to be catalysts for technology adoption and utilization.
The department worked with vendors to purchase of have specialized BIM software donated to the Construction Engineering program. Beginning Fall 2012, students will have access to engineering software such as Revit, Navisworks, Synchro, Timberline, and Innovera. Faculty will begin developing student projects and laboratory experiences that will utilize the industry recognized software beginning Fall 2012.

Review and Approval Signatures & Date:

Program Coordinator if applicable ____________________________

Department Chair: Brent L. Oraham ____________________________

Dean ____________________________