The University of Southern Mississippi

Detailed Assessment Report
2016-2017 Construction Engineering Technology BS*

As of: 11/03/2017 10:56 AM EDT

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request*.)

Mission / Purpose

The University of Southern Mississippi Construction Engineering Technology (CET) program is committed to producing graduates who possess the necessary skills to enter the A/E/C industry fully capable of performing entry-level tasks at the office and in the field. The graduates' critical thinking, discipline and work ethics will be such that a short period of training and work experience will allow them to move into managerial positions.

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Create a construction project safety plan.

Graduates will have the ability to create a construction project safety plan upon graduation.

Relevant Associations:

ETAC-ABET BS Criterion h; ACCE Student Learning Outcome #3

Related Measures

M 1: (Direct): BCT 380 Final Project

The Spring 2017 BCT 380 (Construction Safety) course requires students to create a project specific safety plan based on construction documents provided by the course instructor.

Source of Evidence: Project, either individual or group

Target:

Using a rubric to evaluate each component of the submitted safety plan, a student's performance will be assessed as either unacceptable (below 60 points), poor (60-70 points or higher), acceptable (70 points or higher), or good (80 points or higher). The achievement target will have been met if 80 percent or more assessed students achieve an acceptable or good score.

Finding (2016-2017) - Target: Met

Hattiesburg on-campus: 82.6% (N=23) 19/23 on-campus students received a 70 or higher on the project. Online: 89.5% (N=86) 77/86 online students received a 70 or higher on the project.

M 2: (Direct): BCT 400 Safety Project

The Spring 2017 BCT 400 (Senior Project) course is the capstone course for the Construction Engineering Technology degree. One of the projects required for the spring 2017 course is for students to submit a site- specific safety plan for a construction project.

Source of Evidence: Project, either individual or group

Target:

The achievement target will have been met if 80 percent or more assessed students achieve a 70% or better on the project.

Finding (2016-2017) - Target: Partially Met

Partially Met---Not Met for Hattiesburg On-campus students Hattiesburg On-campus: 60% (N=5) of students received a 70% or higher score on the project. Online: 82% (N=17) of students received a 70% or higher score on the project.

Related Action Plans (by Established cycle, then alpha):

For full information, see the *Details of Action Plans* section of this report.

BCT 400 Safety Plan

Established in Cycle: 2016-2017

Discuss an action plan with the Director of the School and the unit Coordinator(s) that involves content of prerequisite courses...

SLO 2: Create construction project cost estimates.

Students will be able to create construction project cost estimates upon graduation.

Relevant Associations:

ETAC-ABET Associate Criterion b; ACCE Student Learning Outcome #4

Related Measures

M 3: (Direct): AEC 365 Cost Estimate and Report

The Fall 2016 AEC 365 (Estimating 2) course is the second of two estimating courses required for the Construction Engineering

Technology degree. Students create several estimates in this course with each one increasing in scope and complexity. Assignment three requires students to assemble a cost estimate and report.

Source of Evidence: Written assignment(s), usually scored by a rubric

Target:
The achievement target will have been met if 80 percent or more assessed students achieve a 70% or better on the assignment.

Finding (2016-2017) - Target: Not Met
Not Met for both Hattiesburg On-Campus and Online Students Hattiesburg On-campus: (N=23) 57 % of students received a 70 or higher on the assignment. Online: (N=60) 55% of students received a 70 or higher on the assignment.

Related Action Plans (by Established cycle, then alpha):

For full information, see the *Details of Action Plans* section of this report.

AEC 365 Cost Estimate Action Plan
Established in Cycle: 2016-2017
Change the course assignments from three to one (cost estimate and report), concentrating on the quality of one assignment deliv...

M 4: (Direct) BCT 400 Cost Estimate Project
The Spring 2017 BCT 400 (Senior Project) course is the capstone course for the Construction Engineering Technology degree. One of the projects required for the course is for students to submit a comprehensive cost estimate for a construction project.

Source of Evidence: Project, either individual or group

Target:
The achievement target will have been met if 80 percent or more assessed students achieve a 70% or better on the project.

Finding (2016-2017) - Target: Partially Met
Partially Met-_Not Met for Online Students Hattiesburg On-campus: (N=5) 80% of students received a 70 or higher on the project. Online: (N=17) 53% of students received a 70 or higher on the project.

SLO 3: Understand methods of project delivery.

Students will be able to understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.

Relevant Associations:

ETAC-ABET Associate Criterion a; ACCE Student Learning Outcome #12

Related Measures

M 5: (Direct): AEC 380 AIA-201 Test
The Fall 2016 AEC 380 (Specifications & Contract Documents) course includes content about the Construction Project Life Cycle and the roles and responsibilities of all entities and parties involved in the project. Week 6 covers Conditions of the Contract which includes a thorough review of the AIA-A201 document defining duties and responsibilities of all parties of the contract. Students complete a test assessing their understanding of the content in AIA-A201 (Conditions of the Contract) document.

Source of Evidence: Writing exam to assure certain proficiency level

Target:
There are a total of 63 questions on the test. Each question is worth 1 point. Using the following grading scale, a student's performance will be assessed as either an F (0-37 points), D (38-43 points), C (44-50 points), B (51-56 points), A (57-63). The achievement target will have been met if 80 percent or more assessed students achieve a C or better.

Finding (2016-2017) - Target: Met
Met for Online and Hattiesburg On-Campus Students Hattiesburg On-campus: 80.0 % (N=15) of students (12/15) received a 70 or higher on the test. Online section: 91.8% (N=49) of students (45/49) received a 70 or higher on the test.

M 6: (Direct): BCT 174 Delivery Methods
The Fall 2016 BCT 174 (Construction Organization) course is an introductory course for the construction industry. In this course, students learn about different constituencies involved in the construction projects. In addition, they learn about different project delivery methods. In the course students are required to complete an assignment in which they compare 3 major types of project delivery and draw the organizational chart of each. Students also describe the relationship between major constituencies.

Source of Evidence: Written assignment(s), usually scored by a rubric

Target:
Using a Pass/Fail grading criteria, students either have all information correct or they fail the assignment. The achievement target will have been met if 80 percent or more assessed students achieve a "Pass."

Finding (2016-2017) - Target: Met
Met for Online and On-Campus Students Hattiesburg On-campus: (N=35) 97.1.0 % of students (34/35) received a "Pass" on the Project Delivery assignment. Online: (N= 92) 91.3% of students (84/92) received a "Pass" on the Project Delivery assignment.

SLO 4: Utilize electronic-based technology.

Students will be able to utilize electronic-based technology to manage the AEC (Architecture/Engineering/Construction) process.

Relevant Associations:

ETAC-ABET Associate Criterion c; ACCE Student Learning Outcome #10

Related Measures

M 7: (Direct): AEC 132 Final Project
The AEC 132 (Architectural Graphics) course is where students use AutoCAD to develop a partial set of working drawings (plans). The Final Project for the course is evaluated using a rubric developed to assess the components of the submission.

Source of Evidence: Project, either individual or group

Target:
The achievement target will have been met if 80 percent or more assessed students achieve a 70% or better on the project.

Finding (2016-2017) - Target: Not Met
SUMMER 2016: Online: 63% (N=32) – achieved a 70% or better on the Final Project. 9 students should have dropped the course due to non-submission throughout the semester. Only 3 students who were active until the end of the semester scored lower than 70%. FALL 2016 Hattiesburg on-campus: 52% (N=25) achieved a 70% or better on the Final Project. 8 students should have dropped the course due to non-submission throughout the semester. Only 3 students who were active until the end of the semester scored lower than 70%. Online: 71% (N=56) achieved a 70% or better on the Final Project. 13 students should have dropped the course due to non-submission throughout the semester. Only 2 students who were active until the end of the semetser scored lower than 70%.

Related Action Plans (by Established cycle, then alpha):

For full information, see the *Details of Action Plans* section of this report.

AEC 132 Final Project
Established in Cycle: 2016-2017
The findings indicate that students need more support in the beginning of the semester because AEC 132 is deemed a “historically...

M 8: (Direct): AEC 254 Estimating Assignment
The Fall 2016 AEC 254 (Estimating 1) course requires students to submit an assignment using OnScreen Takeoff software to estimate the quantity of concrete, CMU, and brick based on a set of drawings of a Coastal Wildlife Recovery Center. The assignment is scored based on 150 points total. A student earns the 150 points if they are successful in developing the estimate using the software and submit the assignment by the deadline.

Source of Evidence: Written assignment(s), usually scored by a rubric

Target:
A student’s performance will be assessed as either unacceptable (below 90 points), poor (90-104 points), acceptable (105-119 points), or good (120-134 points) or excellent (135-150 points). The achievement target will have been met if 80 percent or more assessed students achieve an acceptable or better score.

Finding (2016-2017) - Target: Met
Met for On-campus and Online Students Hattiesburg On-campus: 100% (N=24) 24/24 of the on-campus Construction Engineering Technology students earned 150 points. 100% achieved excellent. Online: 82.4% (N=57) achieved acceptable or higher score on the assignment. 9/57 of the online Construction engineering Technology students received ‘below 90’ points. 15.75% achieved unacceptable. 1/57 of the online Construction engineering Technology students received ‘120-134’ points. 1.7% achieved good. 47/57 of the online Construction engineering Technology students received ‘135-150’ points. 82.4% achieved excellent.

SLO 5: Increase Hattiesburg on-campus enrollment.
Increase Hattiesburg on-campus enrollment for Construction Engineering Technology.

Related Measures

M 9: IR Enrollment Data
The Construction Engineering Technology program desires to increase the Hattiesburg campus student enrollment. The data for university official enrollment for Hattiesburg on-campus Construction Engineering Technology majors will be acquired in the Fall semester from the Office of Institutional Research.

Source of Evidence: Existing data

Target:
The target will be met if the enrollment for the Hattiesburg on-campus Construction Engineering Technology majors increases by ten percent from Fall 2016 to Fall 2017.

Finding (2016-2017) - Target: Not Met
Official Data from the University of Southern Mississippi Office of Institutional Research acquired on September 14, 2017: Fall 2016- On-campus Construction Engineering Technology majors enrollment was 133 students Fall 2017-On-Campus Construction Engineering Technology majors enrollment was 128 students This is a decline of 5 students.

Related Action Plans (by Established cycle, then alpha):

For full information, see the *Details of Action Plans* section of this report.

Actively Recruit On-Campus Students
Established in Cycle: 2016-2017
The faculty and staff of the School of Construction will attend and host at minimum three (3) recruiting events that target incr...

SLO 6: Employers are satisfied with intern's performance.
Construction Engineering Technology students are required to complete an internship consisting of 400 contact hours as part of their degree requirements.

Related Measures

M 10: (Indirect) Employer Survey
Construction Engineering Technology students are required to complete an internship as part of their degree requirements. At the end of the internship, their supervisor completes an evaluation of the intern's performance as related to his/her assigned tasks during the internship. The Supervisor's Evaluation form consists of 10 questions which have 1-5 point rating options for response. The ratings include: 1=extremely dissatisfied; 2=slightly dissatisfied; 3=satisfied; 4=considerably satisfied; 5=extremely satisfied.

Source of Evidence: Employer survey, incl. perceptions of the program

Target:
The achievement target will have been met if 80 percent or more assessed students achieve a three (3= satisfied) or higher rating based on the average of the responses to the 10 questions on the evaluation form.

Finding (2016-2017) - Target: Met
Hattiesburg On-Campus: 100% (N= 17) 17/17 of the on-campus Construction Engineering Technology students received a 3=satisfied or higher average rating. Online: 100% (N=14) 14/14 of the online Construction Engineering Technology students received a 3=satisfied or higher average rating.

Details of Action Plans for This Cycle (by Established cycle, then alpha)

Actively Recruit On-Campus Students
The faculty and staff of the School of Construction will attend and host at minimum three (3) recruiting events that target increasing enrollment on-campus Construction Engineering Technology majors.

Established in Cycle: 2016-2017
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
Measure: IR Enrollment Data | **Outcome/Objective:** Increase Hattiesburg on-campus enrollment.

Implementation Description: The School of Construction hosted a spring 2017 "Craft of Construction' day where high school and community college students visited our Hattiesburg campus. We plan to host this event again next spring. We will also look for opportunities to attend community college and high school career days.
Projected Completion Date: 08/2018
Responsible Person/Group: Coordinator of Construction Engineering Technology, Student Advancement Administrator and faculty in the program.
Additional Resources: Funding and personnel to plan and manage this all-day event.
Budget Amount Requested: $6,000.00 (recurring)

AEC 132 Final Project
The findings indicate that students need more support in the beginning of the semester because AEC 132 is deemed a "historically difficult course" by the university based on the four academic years of data compiled by the Institutional Research for courses in which 33% of students received a grade of D,F, or W. The instructor of the course will provide more tutorials (available in Canvas) and outside of class assistance to students to better prepare students who are challenged in completing the project.

Established in Cycle: 2016-2017
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
Measure: (Direct): AEC 132 Final Project | **Outcome/Objective:** Utilize electronic-based technology.

Projected Completion Date: 08/2018
Responsible Person/Group: Coordinator of program, instructor of record

AEC 365 Cost Estimate Action Plan
Change the course assignments from three to one (cost estimate and report), concentrating on the quality of one assignment deliverable.

Established in Cycle: 2016-2017
Implementation Status: Planned
Priority: High

Relationships (Measure | Outcome/Objective):

Measure: (Direct): AEC 365 Cost Estimate and Report | **Outcome/Objective:** Create construction project cost estimates.

Projected Completion Date: 08/2018
Responsible Person/Group: Coordinators of CET and AET programs and instructor of record

BCT 400 Cost Estimate Plan

Discuss an action plan with the Director of the School and the unit Coordinator(s) that involves content of prerequisite courses: The Senior Capstone course, BCT 400, is intended for students to show evidence of competencies, not to attain the competencies during the course.

Established in Cycle: 2016-2017
Implementation Status: Planned
Priority: High
Projected Completion Date: 08/2018
Responsible Person/Group: AET and CET director , coordinators, and instructor of record

BCT 400 Safety Plan

Discuss an action plan with the Director of the School and the unit Coordinator(s) that involves content of prerequisite courses: The Senior Capstone course, BCT 400, is intended for students to show evidence of competencies, not to attain the competencies during the course.

Established in Cycle: 2016-2017
Implementation Status: Planned
Priority: High

Relationships (Measure | Outcome/Objective):
Measure: (Direct): BCT 400 Safety Project | **Outcome/Objective:** Create a construction project safety plan.

Projected Completion Date: 08/2018

Analysis Questions and Analysis Answers

What specifically did your assessments show regarding proven strengths or progress you made on outcomes/objectives?

Construction Engineering Technology students met or surpassed the learning outcomes target in several areas of the degree. Both online and on-campus students are able to create a site-specific safety plan for a project, understand methods of project delivery, and use software to develop a quality takeoff in estimating a project. All internship employers are satisfied with our student intern's performance during the required 400 contact hour internship our students typically participate in during the summer of their junior year of studies.

What specifically did your assessments show regarding any outcomes/objectives that will require continued attention?

Both online and on-campus students are not achieving the target outcomes in the AEC 365 (Estimating 2) and BCT 400 (Capstone-estimating portion of this course) courses. Coordinators of the AET and CET programs and course instructor of record of these two classes will review the possible reasons for this concern and develop solutions to implement. We made considerable changes in pre-requisites and course sequencing in the Fall 2015 and some students in earlier catalogs may have been subject to not having the 'new' per-requisites courses completed prior to enrolling in the AEC 365 course. Both online and on-campus AEC 132 (Architectural Graphics) students are not achieving the target outcomes. The instructor of record will be adding additional help session material and time to assist students in learning the material and software.

Annual Report Section Responses

Program Summary.
Summarize highlights of the past year for this particular academic program. Provide context to an outside reviewer.

The Construction Engineering Technology (CET) degree program has around 370 majors (130 on-campus; 240 online) and only 7 faculty teaching courses in both Construction and Architectural Engineering Technology (around 70 majors) degree programs. 66% of the coursework is shared (both Construction and Architecture students must complete as part of the 120 credits required to receive the B.S.) for these two degrees. Construction Engineering Technology is accredited by ETAC-ABET (Engineering Technology Accrediting Commission-Accreditation Board of Engineering Technology) and ACCE (American Council for Construction Education). The CET program is offered both on the Hattiesburg campus and fully online. The CET program has a very active student organization, Student Constructors. This organization meets bi-monthly and there are typically around 50 students and 7 faculty attending. Alumni and industry leaders from all sectors of the construction industry are invited to speak at these meetings and provide our students with insight into what to expect and how to prepare for succeeding in the industry after graduation. Student Constructors members with a faculty advisor participate in national construction student competitions (Design-Build Institute of America and Associated Schools of Construction). Based on data received by the College of Science & Technology Degree Auditor, there were a total of 45 (Fall 2016= 9 ONL & 9 HBG ; Spring 2017= 9 ONL & 16 HBG ; Summer 2017= 2 ONL) Construction Engineering Technology students graduating in 2016-2017. After the Spring 2017 semester, we held a 4-day faculty retreat during which we conducted a thorough review of our CET program curriculum. The retreat resulted in identifying content duplication in a few courses, determining appropriate prerequisites for courses, revising ACCE Student Learning Outcomes associated with courses, and optimizing the schedule of course offerings with limited faculty and the goal of our students being able to graduate in four years. Because our degree program is offered both on the Hattiesburg campus and online, our four courses with labs have been a challenge and an issue with accreditation of the online program. We identified modules with the curriculum offered by the National Center for Construction Education & Research (NCCER) that meet the student learning outcomes required for the lab components. Seven faculty members completed the required NCCER training and exams and are now NCCER certified instructors and may teach the content and conduct the verification of performance tasks associated with the courses they teach.

We have military students enrolled both online and on-campus who are challenged to complete the curriculum due to deployment. Military students (Army, Navy, Air Force) with certain (Military Occupational Specialties) MOS ratings may be given credit for certain NCCER modules that are required by our degree. The Construction Engineering Technology degree program has an engaged, supportive, and active Industry Advisory Council (IAC). There are currently over 50 Industry Advisory Council members comprised from all sectors of the industry with many members being alumni of the program. The IAC provides internship and job opportunities to students, feedback on curriculum, support during accreditation visits, and scholarships and other financial support for the program.

Continuous Improvement Initiatives.
Any department-level or program-level action plans for improvement that are not necessarily tied to a specific student learning outcome or program objective should be described in this field.

The Construction Engineering Technology degree coordinator plans to develop a comprehensive template for assessing outcomes for all major courses. This assessment cycle findings has shown that it is anticipated a root cause of not achieving target outcomes may be tied to pre-requisites. By the next assessment cycle there will be data to review to reflect areas needing improvement in pre-requisite courses.

Closing the Loop.
Summarize the results of previous action plan implementation. Provide evidence of improvement based on analysis of the results.

Not able to address this for this cycle because there are no results from previous action plan that aligns with the major changes in our curriculum in Fall 2015 and revised Student Learning Outcomes and Program Objectives this cycle.

Technology Use Part 1.
State/explain the role of technology in the discipline and outcomes related to technology.

Technology is an integral part of both our online and on-campus Construction Engineering Technology degree program. Our program now requires students to have a laptop, has a classroom with computer systems to accommodate 35 on-campus students, and also has a secure computer lab for students in our major to access with their USM student ID card. The lab has all the specialty software used in the major available for students to use in the event they have a need. Both online and on-campus students complete assignments in all courses offered by the major applying major-specific software to submitting assignments. Both faculty and students are required to be proficient using the university online Learning Management System (LMS) in order to deliver fully online course or course supplements for on-campus courses. Students enrolled in the Surveying (building layout) course use high-tech surveying equipment and instruments during class so they receive hands-on experience using the technology specific to that skill.

Technology Use Part 2.
Develop a narrative to support Technology Use Part 1 by providing program assessment results (if applicable), examples of technology being used to enhance student learning, examples of technology being used to meet program objectives/outcomes, and examples of providing access to and training in the use of technology.

The Construction Engineering Technology degree program has classroom and lab space that is equipped with computer systems with software installed used by the major. Our students are also able to acquire a student license for AutoCAD that they may install on their personal computer system. Having AutoCAD installed on their personal computer increases the time dedicated to learning the software and improving assignment quality. The lab has all the specialty software used in the major available for students to access in the event they have a need. Some of the specialized software students are expected to use upon graduation include: AutoCAD, Revit, Navisworks, Sketchup, WinEst, Onscreen Takeoff, and Microsoft Office. Exposure to software used in the industry will allow our graduating students to make the transition to the workplace, be productive, and able to contribute to employer goals by not requiring extensive, time-consuming training by their employers. Both online and on-campus students complete assignments in all courses offered by the major applying major-specific software to submitting assignments. Both faculty and students are required to be proficient using the university online Learning Management System (LMS) in order to deliver fully online course or course supplements for on-campus courses. Both faculty and upper class student tutors provide hands-on assistance in the computer lab to students struggling with software used in major courses. Classroom lectures are captured using Canvas and posted for students to be able to review over again in the event that they did not fully understand during the class meeting that covered the content. Faculty also offered online help sessions for both on-campus and online students who may need additional instruction in a course.