

University of Louisiana at Lafayette

Detailed Assessment Report 2015-2016 Civil Engineering BS

As of: 11/18/2016 09:10 AM CENTRAL

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

Mission / Purpose

Graduates of the UL at Lafayette civil engineering program are expected within a few years of graduation to have:

- Been established as a practicing professional or engaged in advanced study in civil engineering or a related area.
- Demonstrated their ability to work successfully as a member of a professional team and function effectively as responsible professionals.
- Obtained professional licensure or have made significant progress in becoming a licensed professional engineer.
- Become valuable industry and community contributors in solutions that address regional technical and societal challenges.

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

SLO 1: Knowledge of Math, Science and Engineering

An ability to apply knowledge of mathematics, science, and engineering. Graduates can solve problems in mathematics through differential equations, calculus-based physics, chemistry, and one additional area of science. (Level 3)

Related Measures

M 1: Fundamentals in Engineering Exam

Seniors take the national NCEES FE Exam during their senior year. The results are available in the following term.

Source of Evidence: Standardized test of subject matter knowledge

Target:

Meeting or exceeding the national pass-rate for the NCEES Fundamentals in Engineering Exam (FE). An achievement target of 75% of students passing has been set.

Finding (2015-2016) - Target: Met

The FE passing rate for civil engineering graduates was 89% which exceeds the ABET Comparator of 71%, i.e., the national passing rate. This measure implies success of the objective

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

Change Criteria for Success

Criteria required for success to be further refined.

Established in Cycle: 2009-2010

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Fundamentals in Engineering Exam |

Outcome/Objective: Knowledge of Math, Science and Engineering

Graduate Passing Rate of the Fundamentals in Engineering Exam

The civil engineering B.S. graduates will meet or exceed the national passing rate for the FE Exam.

Established in Cycle: 2014-2015

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Fundamentals in Engineering Exam |

Outcome/Objective: Knowledge of Math, Science and Engineering

Projected Completion Date: 09/2016

Review current objectives

Currently, the three objectives being used are good measures for the desired results of the civil engineering program:

- 1) Performance on the NCEES FE Exam w/the goal of meeting or exceeding the national pass rate.
- 2) Successful performance in the senior design project as simulating professional practice requirements
- 3) Successful employment as civil engineers

The first objective is a national exam taken by graduates of ABET accredited programs. In addition to a comparison of the success of our students with other engineering programs, it is the next step on the P.E. licensure path which is very important to the graduates career. The "capstone" design project is a culmination of almost all subjects covered in the program and demonstrates the student's knowledge and ability to use fundamental engineering principles. The third goal involves the graduate's and the program's success by being employed in civil engineering related industry; thus, the beginning of their professional engineering career. It can be hard to track all graduates since they go in different directions after graduation and a greater effort or different measuring technique is needed to better quantify or more accurately measure success.

Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Alumni Success | **Outcome/Objective:** Graduate Employment

Measure: Fundamentals in Engineering Exam |

Outcome/Objective: Knowledge of Math, Science and Engineering

Measure: Senior Design Project | **Outcome/Objective:** Design Ability

Implementation Description: Review each objective and the measurements used.

Projected Completion Date: 06/2017

Responsible Person/Group: Civil Engineering Department Head w/input from the CE Advisory Board

An ability to design a system, component, or process to meet desired needs. Graduates can design a complex system or process to meet desired needs, within realistic constraints such as economic, environmental, social, political, ethical and safety, constructability, and sustainability. (Level 5)

Related Measures

M 2: Senior Design Project

Graduating seniors take the CIVE 442 Civil Engineering Design course in their last year, normally last semester. The course requires that drawings, a design report and calculations be presented and that a team presentation be made before a panel of faculty and/or professional practitioners.

Source of Evidence: Capstone course assignments measuring mastery

Target:

Demonstrate an acceptable evaluation of the senior design project (Capstone design) by a panel consisting of faculty and professional engineers.

Finding (2015-2016) - Target: Met

The fall 2013 Senior Design project involved the site development and structural design of a restaurant located on the southwest coast of Louisiana. It included considerations for environmental issues, storm frequency and magnitude, loads, codes, regulatory concerns, structural and foundation, hydraulic issues, mechanical and electrical needs, geometry, etc. The project team consisted of 7 graduating CIVE seniors, 2 senior electrical students and 1 mechanical engineering student. Students were required to submit an overall report, including the analysis, design calculations, drawings and make a formal presentation before a panel of professionals as well as the CIVE student body.

The evaluating panel of professionals was composed of 7 faculty and practicing professional engineers. The character of the project includes multi-disciplinary issues and design needs. The overall project is managed by a student project manager with lead student designers managing the different design components. Each student is directly involved with two or more design component/groups with a leadership/management role on one of the activities.

This requires multi-disciplinary teaming efforts for all and a management/leadership role for each.

In addition to the documents submitted, each member of the reviewing panel has the opportunity to question the design concept, calculations and the ultimate design. Based on the review, each individual on the panel rates the success. A rating scale of 5-excellent, 4-very good, 3-acceptable performance, 2-poor, 1-not achieved or demonstrated was used for measuring success of each student. All individuals achieved a rating of from 3.5 (acceptable performance+) to 5 (excellent). The composite score for the design teams and the project, at large, was 4.4. Since a rating of 3 was identified as an acceptable performance, the CIVE 442, Senior Design course met the outcome objective.

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

Consideration of Revision

Consideration will be given to revisions in panel evaluations of individual students.

Established in Cycle: 2009-2010

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

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Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

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Measure: Alumni Success | **Outcome/Objective:** Graduate Employment

Measure: Fundamentals in Engineering Exam |
Outcome/Objective: Knowledge of Math, Science and Engineering

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Implementation Description: Review each objective and the measurements used.

Projected Completion Date: 06/2017

Responsible Person/Group: Civil Engineering Department Head w/input from the CE Advisory Board

SLO 3: Graduate Employment

All graduates are employable as a Civil Engineering Intern or prepared to continue in a graduate or professional program.

Related Measures

M 3: Alumni Success

Exit interviews and follow-up surveys with seniors and BS graduates are conducted each semester to determine whether graduates found an internship or continued their studies.

Source of Evidence: Alumni survey or tracking of alumni achievements

Target:

Graduate Exit Interviews and Post-Graduate Surveys with 100 percent of graduates positioned as civil engineering interns or accepted in a post graduate program.

Finding (2015-2016) - Target: Met

In the exit interviews conducted with the graduating seniors most indicate that have found positions or have strong leads on job opportunities. Some were planning on continuing their studies through a graduate program at UL or other institution.

[Preview Formatting]

Last Updated by Spencer Black on 9/4/2015 Established by Kenneth McManis on 5/2/2014

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

Improve Graduate Tracking

Work toward improving office tracking and documentation of graduate status.

Established in Cycle: 2009-2010

Implementation Status: Planned

Priority: High

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Analysis Questions and Analysis Answers

How were assessment results shared and evaluated within the unit?

Measurement:

1. Performance on the NCEES FE Exam is distributed to all civil engineering faculty and the Civil Engineering Advisory Board. It is further used to evaluate outcomes for ABET accreditation

2. Evaluating the student's performance on the Senior "Capstone" Design project involves the participation of all faculty with additional practicing professional engineers serving on a panel. The professional engineers and faculty serve as mentors during the design phase and as a group review the design documents (calculations & drawings) and through question on a presentation. All civil engineering students are invited and encouraged to attend the presentation of the Senior "Capstone" Design Project.

3. Success in being hired as a civil engineer upon graduation or admission into a graduate program. In an exit exam all graduating students are asked whether they have an offer of employment or been admitted to graduate school. Not all have finalized their plans at that time. A best estimate based on answers and information that continues to come in from other students or the faculty also contributes in determining the status of each graduate. In the future, better contact information will be attempted to help the graduate and to monitor their position in the future.

The first objective/measurement is very definitive w/r to success. The second is also a valid and good measurement. While the third is dependent on a snapshot in time, it is an important objective and does reflect on the program's success.

Identify which action plans [created in prior cycle(s)] were implemented in this current cycle. For each of these implemented plans, were there any measurable or perceivable effects? How, if at all, did the findings appear to be affected by the implemented action plan?

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The measurements for success in achieving the objectives are still being used and are valid. The Civil Engineering Department and its advisory board are happy with the objectives, measurements and results.

What has the unit learned from the current assessment cycle? What is working well, and what is working less well in achieving desired outcomes?

The FE Exam provides a good measure with the performance of other civil engineering students, nationwide. By monitoring the results over a yearly or several yearly cycles, much information can be identified and draws the attention of faculty that are engaged in teaching those subjects. The ability for civil engineers to be able to design systems and components is recognized as being very important to the engineering accreditation group, ABET. The panel review of the Senior Design involves a review of calculations, drawings, specifications and a defense by the design group and by individuals within the group. The feedback from the faculty and practitioners has been positive. As regards the employment of graduate, it is also an important measure of success in our program objectives. The employment of our graduates indicates a satisfaction with the civil engineering profession and reflects on the ability of our academic program to prepare students for professional practice.