

# University of Louisiana at Lafayette

## Detailed Assessment Report 2015-2016 Chemical Engineering BS

As of: 11/18/2016 08:58 AM CENTRAL

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

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

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#### **SLO 1: Application of Knowledge**

An ability to apply knowledge of mathematics, science, and engineering. Graduates can solve problems in these areas.

#### Related Measures

##### **M 1: Fundamentals in Engineering Exam**

Meeting or exceed in the national pass-rate on the NCEES Fundamentals in Engineering Exam (FE). Seniors take the national NCEES FE Exam during their senior year. The results are available in the following semester. The FE examination is administered twice annually in the fall and spring.

Source of Evidence: Standardized test of subject matter knowledge

#### **Target:**

75% of students will meet or exceed in the national pass-rate on the NCEES Fundamentals in Engineering Exam (FE).

#### **Finding (2015-2016) - Target: Not Met**

On average 60% of the chemical engineering graduates over three semesters passed the FE. The average national passing rate over the same time period was 77%. It is important to mention that only 6 students took the FE exam over the assessed period. As a department we are encouraging more of our students to take the FE during senior exit interviews, and meetings with the advisory board.

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

##### **FE Exam reporting**

A relatively small number of chemical engineering students are taking the FE Exam per year. Findings from this instrument will be reported every two years. This change will result in the report of a larger and more representative student sample.

**Established in Cycle:** 2013-2014

**Implementation Status:** Planned

**Priority:** High

##### **Relationships (Measure | Outcome/Objective):**

**Measure:** Fundamentals in Engineering Exam |

**Outcome/Objective:** Application of Knowledge

**Projected Completion Date:** 05/2015

#### **SLO 2: Design Ability**

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.

#### Related Measures

## **M 2: Senior Design Project**

Demonstrating an acceptable evaluation of the senior design project by a panel consisting of faculty and practicing chemical engineers. Graduating seniors take the CHEE 408 Chemical Engineering Design course in their last semester. The various teams make technical presentations that are evaluated by a panel of faculty and or professional practitioners. Student courses assessments are performed on design during the spring semester of the senior year.

Source of Evidence: Project, either individual or group

### **Target:**

Value of student course assessment should be below 2.0 on every course with design content.

### **Finding (2015-2016) - Target: Met**

The average of the 41 students was 0.8

For the Spring 2016 CHEE 408 course, we had both a written final report and a final presentation. For the final presentation, we had 4 industrial judges and 1 judge from academia. These two project components had the following performance distribution by percentage of the class (the distribution was identical for both instruments):

### **FINAL REPORT and FINAL PRESENTATION**

Percent	Scale
85.7%	0-1
14.3%	1-2
0.0%	2-3
0.0%	3-4
0.0%	4-5

The average of the 42 students was 0.34

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

#### **Continuation of Current Process**

Continue with the current process which appears to be working well.

**Established in Cycle:** 2009-2010

**Implementation Status:** In-Progress

**Priority:** High

#### **Relationships (Measure | Outcome/Objective):**

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

## **SLO 3: Success in Industry**

Graduates can perform successfully in industry and in graduate school or professional programs.

### **Related Measures**

#### **M 3: Exit Interviews and Surveys**

Exit student interviews and post-graduate surveys with 90% of graduates positioned in chemical engineering or accepted into a post graduate program. Exit interviews with graduating seniors provide an indication of the status of graduate employment. Follow-up surveys with seniors and BS graduates are conducted every 2-years. Every graduating senior is required to participate in the Chemical Engineering Exit Interview with the Department Head.

Source of Evidence: Alumni survey or tracking of alumni achievements

### **Target:**

Exit interviews with graduating seniors provide an indication of the status of graduate employment. Follow-up surveys with seniors and BS graduates are conducted every 2-years. Every graduating senior is required to participate in the Chemical Engineering Exit Interview with the Department Head.

**Finding (2015-2016) - Target: Met**

Over 40 senior exit interviews were conducted over the last 1.5 years. The format of the interview was modified and now the department's industrial advisory board conducts the senior exit interviews. Over 70% of the seniors that graduated Spring 2016 received employment offers from industry, or decided to pursue graduate school or medical school. The seniors assessed courses, and soft skills, such as communication, team work, and cooperative learning. They rank courses on a scale of 1-5 (poor to excellent). These scores are used to propose changes, and improve course delivery and content.

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

**Continuation of Current Process**

Continue with the current process which appears to be working well.

**Established in Cycle:** 2009-2010

**Implementation Status:** In-Progress

**Priority:** High

**Relationships (Measure | Outcome/Objective):**

**Measure:** Exit Interviews and Surveys | **Outcome/Objective:** Success in Industry

## **Analysis Questions and Analysis Answers**

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**How were assessment results shared and evaluated within the unit?**

Results are shared in faculty meetings. The results are discussed and suggestions are provided by faculty for improvement of the program. The faculty selects specific instruments to measure specific outcomes. They established the metrics for the outcomes. The achievement of the metrics are discussed at faculty meetings, and proposed changes to courses are suggested by instructors of record and other faculty members.

**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?**

Industry representatives continue to be involved in the evaluation of plant and process design projects. This practice provide students with an understanding of industry expectations. It gives the students a sense of confidence as future engineers.

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

Course assessments and industry evaluations of plant and process design projects are working excellently. These tools provide a clear view of the strengths and weaknesses of the program, and the data to design strategies for improvement. Our industrial advisory board is also participating in the senior exit interviews. They provide the department head with concerns about the program and also suggest strategies for improvement.

Implementation of these strategies is discussed during advisory board meetings every semester.