

BS Chemical Engineering

Annual Program Report Template

Year:	2022 (submitted 3/30/2023)
Program:	BS Chemical Engineering
Contact Person (include email & phone#)	Tracy Benson

Summary of Continuous Improvement Efforts since Last Report

Provide a brief description of how assessment results have been used for program improvement. Point to a specific example of how an assessment provided the program with data it could use for improvement and what that improvement was, if possible, also show evidence of the improvement. You may look at data from the two previous academic years to support this case.

Respond here:

The department has made the following improvements.

- 1. Improving Process Controls Curriculum**
- 2. Additional Senior Design Projects**
- 3. Increased Accessibility to Program Software**

1. Improving Process Controls Curriculum

Identification: Using input from our department's Advisory Council, there is need to improve/update the process controls curriculum and laboratory experiments.

Improvement: A survey has been developed to understand industry's need and is being deployed to industry experts in process controls. An improvement plan will be developed based on the results of the survey.

Result: No results at this time.

2. Identification of Additional Senior Design Projects

Identification: Senior Design topics rotate between refining and ethylene production. Students are limited to design topics, limiting their understanding of broader chemical engineering fields.

Improvement: More Senior Design topics will be developed using industry input and direction. Industry subject matter experts may serve as guides for student teams throughout the design process.

Result: No results at this time.

3. Increased Accessibility to Program Software

Identification: The department has two computer laboratories (72 computers total), which houses all the software for the chemical engineering program. Students have limited access to these facilities, and computers may have slow processing speeds at times. An investigation determined that students could access all the software via a virtual desktop interface (VDI) that is maintained by the university's IT department.

Improvement: The VDI had been in place for ~4 years; however, students complained of slow processing times and timeout problems. The university's IT department expanded the capability from 2 to 8 CPUs per user and extended sessions timeouts from 15 to 60 minutes.

Result: Students who used the VDI system responded with no complaints from the Fall 2022 semester. The department is continuing to monitor and will address problems as they arise.

Program Highlights Since Last Report

Identify and briefly discuss any programmatic curriculum changes made since the last report (e.g. new courses, course changes, SLO changes, course deletions).

Respond here:

Table 1. Assessment Results and Analyses for Current Cycle.

STAGE 1: PLAN				STAGE 2: DO		STAGE 3: STUDY
Departmental Student Learning Goal	Program Student Learning Outcome	Assessment	Assessment Method/Location	Benchmark Expectations	Data Results	Actions/Goals Based on Data Results* What do the data tell you? How will you use this data? How were data from the last cycle used to make changes during this cycle, and What were the results of those changes?
An ability to recognize ethical responsibilities in engineering solutions and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Math and Engineering Formulation	Plant Design II	written report	>75 %	85.7 %	ok
Understands the impact of engineering solutions	Ethical and professional responsibilities	Plant Design II	written report	>75 %	85.7 %	ok
Understand the ethical implications of engineering license, conflict of interest, and moral obligations of an engineer	Societal	Plant Design II	exam	>75 %	95.1 %	ok

An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Recognize the need to learn	Plant Design II	Essay assignment	>75 %	64.3 % displayed an exemplary ability to describe the need for lifelong learning and 21.4 % displayed an accomplished ability to describe lifelong learning.	ok
Ability to prepare projects using up-to-date materials found outside of class	Data collection and analysis	Plant Design II	written report	>75 %	78.5 %	Met goals but on the low side. Student performance decreased compared to previous assessments. However, the assessment was based on project work and due to issues related to COVID-19, student performance on team projects, in general, was diminished. The score could be an anomaly. The indicator will be reassessed in one year. If performance is still under the 75% target, an additional action plan will be created.
Ability to apply critical thinking skills to open ended problems	Draw conclusios	Plant Design II	written report	>75 %	78.6 %	Met goals but on the low side. Will be address by Improvement Plan 2. Will continue to monitor and make improvements as necessary.

Table 2. Continuous Improvement Results Since Last Report

Stage 4: ACT		
Actions/Goals Based on Data Results <i>*Copy last cycle's actions/goals and report on progress toward continuous improvement on those here.</i>	Status <i>C=Complete</i> <i>P=Progressing</i> <i>N=No Action Taken</i>	Discussion of Status <i>If C, describe efforts that led to accomplishment of actions/goals.</i> <i>If P, provide update on progress made toward accomplishing actions/goals and what tasks remain</i> <i>If N, discuss why action toward accomplishing actions/goals has been delayed and what work will be initiated toward accomplishment.</i>
See program improvements in first section		