

Assessment Cycle: 2019 Reporting

Overall Review: Report Approved

COMPLIANT

Mission Statement

The mission of the Department of Chemical and Biomedical Engineering is to prepare graduates with fundamental knowledge and contemporary skills for the development, economic design, and safe operation of chemical and biological systems, processes, products, and methods in a manner compatible with societal values.

Goal 1: Not Assigned

Discipline Specific Knowledge and Skills

1a. Student Learning Outcome Statement

Audit Review: AC

• Graduates of this program will demonstrate proficiency in developing and solving complex mathematical models of systems and processes encountered in chemical engineering.

1b. Method of Assessment

Audit Review: AC

All students in this program will be required to take a course in the field of chemical reaction engineering at the graduate level. They will be required to do a course project that demonstrates their proficiency in modeling of complex chemical systems. At least two faculty members will evaluate this report using the rubric developed below by a faculty committee. 5-10 reports will be randomly selected from the whole class for this assessment purpose.

Program assessment will be done by a faculty committee who will review the evaluations. Wide disparities in ratings of any single report will be discussed with the evaluators. The assessment will focus on areas that need improvement.

To ensure reliability of the assessment instrument for this outcome, the members of the Departmental Graduate Committee reviews the rubric periodically and recommends/revisions if necessary.

- Rating of 5 (Excellent): The report demonstrates an in depth understanding of chemical kinetics.
- Rating of 4 (Very Good): The report demonstrates a very good understanding of chemical kinetics. The report has originality and shows some contributions to the body of knowledge in Chemical engineering
- Rating of 3 (Good): The report demonstrates a solid understanding of chemical kinetics. The report has at least one original contribution to the body of knowledge.
- Rating of 2 (Fair): The report shows a weak understanding of chemical kinetics
- Rating of 1 (Poor): The report shows that the student is lacking a knowledge of chemical reaction engineering in Chemical engineering.

The assessment will focus on areas that need improvement. The assessment will be conducted during the final semester of the students in the program.

To ensure reliability of the assessment instrument for this outcome, the members of the Departmental Graduate Committee reviews the rubric periodically and recommends/revisions if necessary.

1c. Performance Targets

Audit Review: AC

It is the expectation that 80% of the students will earn a rating of 3.0 or more and that at least 20% will get a rating of 4.0 or more.

1d. Assessment Results

Audit Review: AC

10 of the students in the MSChE program were evaluated in their proficiency in modeling complex chemical systems. The results were as follows:
% of students who earned a rating of 3.0 or more: 80%
% of students who earned a rating of 4.0 or more: 20%

1e. Use of Assessment Results

Audit Review: AC

The results were presented to the Departments Assessment Committee. The results indicated that we were meeting our target but barely.

In order to improve the outcome that graduates of the Masters program will demonstrate proficiency in developing and solving complex mathematical models of systems and processes encountered in chemical engineering, the committee made two changes:

- Moved a core required course in the graduate program on Advanced Molecular Thermodynamics to the fall semester so that incoming students would take it concurrently with a course on mathematical methods. By this curricular change, the students will be exposed to the fundamental underpinnings behind microscopic theoretical description of chemical kinetics. This will enable them to improve their performance in the assessed project done during the subsequent spring semester course on chemical reaction engineering and kinetics.
- The committee also plans to elevate the performance targets to the expectation that 75% of the students will earn a rating of 3.0 or more and that at least 25% will earn a rating of 4.0 or more.

We plan to continue to assess the outcome again in 2020 and understand the impact of the above curricular and performance target change.

Plan Review Comments

Report Review Comments

Assessment Methods

Course Related Assessments

Written Report or Essay
Project Evaluation

Cumulative Assessments

Performance Related Assessments

External-course Assessments

Standard Assessments
