

CHEMICAL ENGINEERING PROGRAM ASSESSMENT PLAN

Program Learning Objectives

By graduation, students will demonstrate the following outcomes:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) an ability to function on multidisciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Matrix for Course Outcomes in the Department of Chemical Engineering.

Course	Engineering Program Outcomes										
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
<i>ChE 150: Green Engineering</i>						✓		✓	✓	✓	✓
<i>ChE 113: ChE Process Analysis</i>	✓				✓					✓	
<i>ChE 116: Fundamentals of Computing</i>		✓			✓						✓
<i>ChE 243: Fluid Dynamics</i>	✓				✓				✓	✓	✓
<i>ChE 225: Thermodynamics</i>	✓				✓		✓			✓	✓
<i>ChE 244: Heat and Mass Transport</i>	✓				✓		✓		✓	✓	✓
<i>ChE 231: Reactor Design</i>	✓				✓		✓		✓	✓	✓
<i>ChE 250: Separations</i>	✓		✓		✓			✓	✓	✓	✓
<i>ChE 246: ChE Junior Lab</i>	✓	✓		✓			✓				
<i>ChE 279: ChE Practice</i>						✓		✓	✓	✓	
<i>ChE 273: Process Design I</i>	✓		✓	✓	✓		✓	✓		✓	✓
<i>ChE 255: Senior Lab: ChE Processes</i>	✓	✓		✓			✓				
<i>ChE 272: Process Control</i>	✓		✓		✓				✓		✓

Each Course Syllabus denotes which Program Outcomes are addressed by that course.

Assessment of Program Outcomes

Engineering Benchmarking Surveys. The University of Rochester participates in Engineering Benchmarking (EBI) Surveys to help assess the quality of the undergraduate experience. The survey is administered to graduating seniors, and also to alumni. Several questions were included *which directly address ABET Engineering Program Outcomes*.

Senior surveys directly probe students that have just completed the program. The survey consists of 10-15 questions designed by the Associate Chair. The questions are aimed at determining if the overall scope and structure of the program is providing students with a stimulating college experience and a cohesive set of skills, capabilities, and attributes. Open ended questions are intended for the students to reflect on their career preparatory needs, and whether the program fulfills them. The associate chair organizes, interprets, and presents results of senior surveys annually at the faculty retreat.

Alumni who graduated from the department within the last 10 years are surveyed. This survey is conducted less frequently—about once every 4 years—to enable a large enough number of participants so the results are statistically meaningful. Questions in this survey focus on whether or not graduates of the program are equipped with skills and attributes valued by them and their employers.

Performance Criteria Executive Summaries. Each course instructor is assigned a few performance criteria and is responsible for annually assessing whether students, in his/her course, are meeting the criteria. Instructors are responsible for developing their own assessment methodologies, measurement rubrics, and follow-up recommendations. These results are presented annually at our summer retreat. If a shortcoming in the program is identified, action-items and goals are drafted with the aim of improving the subsequent year's assessment results.