

Assessment Plan

Western Michigan University

Chemical Engineering

Mission Statement: Chemical Engineering Program Outcomes

- (a) an ability to apply knowledge of mathematics, science, and engineering to chemical engineering problems
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a chemical engineering 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 multi-disciplinary teams
- (e) an ability to identify, formulate, and solve chemical engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) Students can communicate effectively with a variety of constituents using both written and oral reports and can use graphical aids to enhance the effectiveness of their communication.
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social 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 chemical engineering practice

Vision Statement: Chemical Engineering Program 10 year vision

The Chemical Engineering program at Western Michigan University is characterized by:

Is ranked in the top 3 chemical engineering programs in the State of Michigan and:

- ? An ABET accredited BS chemical engineering program that graduates 30 ?35 job ready graduates per year
- ? Provides instructional laboratory experiences that ensure a practical understanding of chemical engineering with a minimum of 5 credit hours of laboratory work,
- ? Provides opportunities to develop excellent written and oral communication skills and,
- ? Provides opportunities to experience chemical engineering education in a global context.
- A MS chemical engineering programs that graduates 15 ? 20 students per year that:
 - ? Have theoretical and practical expertise in bioprocess and biochemical engineering,
 - ? Provides both thesis and non-thesis options, and
 - ? Serves both traditional graduate students and employed engineers.
- A PhD chemical engineering program that graduates 5 ? 7 students per year.
- An appropriate level of faculty to ensure
 - ? Strong undergraduate-faculty interaction through small class sizes and research opportunities,
 - ? Well developed mentoring of graduate students and,
 - ? An externally funded research program that is, on average, first or second in the College of Engineering and Applied Sciences.
- A department name of Chemical Engineering or equivalent.

Outcome: Criterion 3 a

Students have an ability to apply knowledge of mathematics, science and engineering [to chemical engineering problems]

Track: BSE Chemical

Start Date: 07/01/2009

End Date: 06/30/2010

Outcome Status: Active

Means of Assessment

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
CHEG 2960 Exams, quizzes, & related course work Assessment Method Category: Course-Embedded Measure	70% of students achieve at the 70% level in each course.	Every semester	Yes
CHEG 4100 Exams, quizzes, & related course work Assessment Method Category: Course-Embedded Measure Related Documents: CHEG4100 Retrospective '07	75% of students acheive 7%% level or better		Yes

Related Courses

- * CHEG 2960 - Material and Energy Balances
- * CHEG 3110 - Unit Operation I -- Fluids
- * CHEG 3120 - Unit Operations II - Heat Transfer
- * CHEG 3200 - Intro. to ChE Thermodynamics
- * CHEG 3300 - Mass Transfer
- * CHEG 4100 - Chem. Reaction Engineering

Outcome: Criterion 3 b

Student have an ability to design and conduct experiments as well as to analyze and interpret data

Track: BSE Chemical

Start Date: 07/01/2009

End Date: 06/30/2010

Outcome Status: Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
CHEG 4200 -- Lab reports CHEG 2810 -- Lab reports (technical component) Assessment Method Category: Course-Embedded Measure Related Documents: CHEG281EndofCourseAssessment_07.doc CHEG420RetrospectiveSpring08.doc	CHEG 4200 -- 75% of students will achieve at the 75% level or better. CHEG 2810 -- 75% of students will achieve at the 75% level or better	CHEG 4200 -- every time course is offered. CHEG 2810 -- every time course is offered.	Yes

Related Courses

- * CHEG 2810 - Data Acquisition & Handling
- * CHEG 3120 - Unit Operations II - Heat Transfer
- * CHEG 4200 - Separation Processes
- * CHEG 4830 - Process Control I

Outcome: Criterion 3 c

Students have 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 sustatinability

Track: BSE Chemical

Start Date: 07/01/2009

End Date: 06/30/2010

Outcome Status: Active

Related Courses

- * CHEG 3810 - Computer Modeling and Simulation I - Processes

- * CHEG 4600 - Plant Econ. & Project Design
- * CHEG 4870 - Senior Design Project

Outcome: Criterion 3 d

Students have an ability to function on multidisciplinary teams

Track: BSE Chemical

Start Date: 07/01/2009

End Date: 06/30/2010

Outcome Status: Active

Related Courses

- * CHEG 2610 - Environmental Eng.
- * CHEG 4830 - Process Control I

Outcome: Criterion 3 e

Students have an ability to identify, formulate, and solve chemical engineering problems.

Track: BSE Chemical

Start Date: 07/01/2009

End Date: 06/30/2010

Outcome Status: Active

Related Courses

- * CHEG 1010 - Intro. to Chem. Eng.
- * CHEG 2960 - Material and Energy Balances
- * CHEG 3110 - Unit Operation I -- Fluids
- * CHEG 3120 - Unit Operations II - Heat Transfer
- * CHEG 3300 - Mass Transfer
- * CHEG 4600 - Plant Econ. & Project Design
- * CHEG 4870 - Senior Design Project

Outcome: Criterion 3 f

Students have an understanding of professional and ethical responsibility

Track: BSE Chemical

Start Date: 07/01/2009

End Date: 06/30/2010

Outcome Status: Active

Related Courses

- * CHEG 2610 - Environmental Eng.

Outcome: Criterion 3 g

Students have an ability to communicate effectively

Track: BSE Chemical

Start Date: 07/01/2009

End Date: 06/30/2010

Outcome Status: Active

Related Courses

- * CHEG 1010 - Intro. to Chem. Eng.
- * CHEG 2810 - Data Acquisition & Handling
- * CHEG 3120 - Unit Operations II - Heat Transfer
- * CHEG 4600 - Plant Econ. & Project Design

* CHEG 4870 - Senior Design Project

Outcome: Criterion 3 h

Students have the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social context.

Track: BSE Chemical
Start Date: 07/01/2009
End Date: 06/30/2010
Outcome Status: Active

Related Courses

* CHEG 2610 - Environmental Eng.

Outcome: Criterion 3 i

Students have a recognition of the need for, and an ability to engage in life-long learning.

Track: BSE Chemical
Start Date: 07/01/2009
End Date: 06/30/2010
Outcome Status: Active

Related Courses

* CHEG 4870 - Senior Design Project

Outcome: Criterion 3 j

Students have a knowledge of contemporary issues

Track: BSE Chemical
Start Date: 07/01/2009
End Date: 06/30/2010
Outcome Status: Active

Related Courses

* CHEG 2610 - Environmental Eng.

Outcome: Criterion 3 k

Students have an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Track: BSE Chemical
Start Date: 07/01/2009
End Date: 06/30/2010
Outcome Status: Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
CHEG 4200 -- Homework and exam questions Assessment Method Category: Course-Embedded Measure Related Documents: CHEG420RetrospectiveSpring08.doc	75% of students will achieve at the 75% level or better.	Each semester course is offered.	Yes
Lab exercises in CHEG 1810 Assessment Method Category: Course-Embedded Measure Related Documents: CHEG181EndofCourseAssessment08.doc	75% of students will perform at the 75% level or better		Yes
Excel and MathCad exams Assessment Method Category:	75% of students would achieve at 75% level		Yes

Means of Assessment

Assessment Method	Criterion	Schedule	Active
Course-Embedded Measure			

Related Courses

- * CHEG 1810 - Intro. to ChE Computations
- * CHEG 3300 - Mass Transfer
- * CHEG 3810 - Computer Modeling and Simulation I - Processes
- * CHEG 4200 - Separation Processes