

CE 400/500 Process Safety Management

Credits

Credit hours: 3

Instructor: David Courtemanche (Fall 2020)

Textbook and/or other required materials

Crowl, Daniel A. & Louvar, Joseph F. 2011.

Chemical Process Safety: Fundamentals with Applications, 3rd ed. Prentice Hall, Upper Saddle River, NJ

Catalog description

Process Safety Management is a core responsibility of a Chemical Engineer. This course will focus on the fundamental aspects of a safety management program including Hazards Analysis and many basic calculations involved in assuring safe operation of a chemical process.

Type

Elective

Prerequisites

Approved CE major or permission of department

Corequisites

None

Course goals

The following table lists course learning outcomes for CE400/500. The statements generally complete the sentence "Upon completing this course, students should be able to..."

	Goal	ABET Student Outcome	Assessment Method
1	Understand the 14 Elements of an OSHA PSM Program	2, 4	Exams, homework
2	Understand Toxic Hazards in a chemical process	1,2	Exams, homework
3	Understand Fire and Explosion Hazards in a chemical process	1,2	Exams, homework
4	Understand methods of preventing Fires and Explosions and Toxic Hazards	2	Exams, homework
5	Understand the principles of conducting a PHA	2, 4	Exams, homework
6	Be able to use models for toxic and flammable releases	1	Exams, homework
7	Be able to conduct a HAZOP analysis	2	Exams, homework
8	Be able to estimate event frequencies	1	Exams, homework
9	Understand principles of LOPA analysis	2	Exams, homework
10	Understand principles and perform sizing of Relief Devices	1, 2	Exams, homework

Student Outcome Support

0: No coverage, 1: Introduced, 2: Practiced/Reinforced, 3: Mastered

Student Outcome	1	2	3	4	5	6	7
Support Level	3	3	0	3	0	0	0

Topics Covered

OSHA PSM Requirements	Hazards Identification	Toxic Hazards
Fire and Explosion Hazards	Risk Analysis	Static Electricity
Process Hazards Analysis	HAZOP	Toxic Release Modeling
Flammable Release Modeling	Estimating Event Frequency	Relief Devices