

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

DEPARTMENT School of Chemical Engineering EFFECTIVE SESSION Spring 2013

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

<input checked="" type="checkbox"/> 1. New course with supporting documents	<input type="checkbox"/> 7. Change in course attributes (department head signature only)
<input type="checkbox"/> 2. Add existing course offered at another campus	<input type="checkbox"/> 8. Change in instructional hours
<input type="checkbox"/> 3. Expiration of a course	<input type="checkbox"/> 9. Change in course description
<input type="checkbox"/> 4. Change in course number	<input type="checkbox"/> 10. Change in course requisites
<input type="checkbox"/> 5. Change in course title	<input type="checkbox"/> 11. Change in semesters offered (department head signature only)
<input type="checkbox"/> 6. Change in course credit/type	<input type="checkbox"/> 12. Transfer from one department to another

PROPOSED: Subject Abbreviation <u>CHE</u> Course Number <u>43000</u> Long Title <u>Process Safety Management</u> Short Title <u>Process Safety Management</u> <small>Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)</small>	EXISTING: Subject Abbreviation _____ Course Number _____	TERMS OFFERED Check All That Apply: <input type="checkbox"/> Summer <input checked="" type="checkbox"/> Fall <input type="checkbox"/> Spring
		CAMPUS(ES) INVOLVED <input type="checkbox"/> Calumet <input type="checkbox"/> N. Central <input type="checkbox"/> Cont Ed <input type="checkbox"/> Tech Statewide <input type="checkbox"/> Ft. Wayne <input checked="" type="checkbox"/> W. Lafayette <input type="checkbox"/> Indianapolis

CREDIT TYPE 1. Fixed Credit Cr. Hrs. <u>3</u> 2. Variable Credit Range: _____ Minimum Cr. Hrs _____ (Check One) To <input type="checkbox"/> Or <input type="checkbox"/> Maximum Cr. Hrs _____ 3. Equivalent Credit: Yes <input type="checkbox"/> No <input type="checkbox"/>	COURSE ATTRIBUTES: Check All That Apply 1. Pass/Not Pass Only <input type="checkbox"/> 2. Satisfactory/Unsatisfactory Only <input type="checkbox"/> 3. Repeatable <input type="checkbox"/> Maximum Repeatable Credit: <input type="checkbox"/> 4. Credit by Examination <input type="checkbox"/> 5. Fees <input type="checkbox"/> Coop <input type="checkbox"/> Lab <input type="checkbox"/> Rate Request <input type="checkbox"/> Include comment to explain fee 6 Registration Approval Type <input type="checkbox"/> Department <input type="checkbox"/> Instructor <input type="checkbox"/> 7 Variable Title <input type="checkbox"/> 8 Honors <input type="checkbox"/> 9 Full Time Privilege <input type="checkbox"/> 10 Off Campus Experience <input type="checkbox"/>
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Schedule Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated	Cross-Listed Courses
Lecture	50	3	16	100	
Recitation					
Presentation					
Laboratory					
Lab Prep					
Studio					
Distance					
Clinic					
Experiential					
Research					
Ind. Study					
Pract/Observ					

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
Concurrent Prerequisites: CHE 34800, CHE 37800
 Students will develop knowledge of process safety management in the process industries. This new course is being developed with significant input from industrial safety professionals and will prepare students for the safety problems they will encounter in industry. **Course Outcomes:** Demonstrate knowledge and understanding of the elements of process safety management. Be able to pro-actively identify and analyze safety hazards. Demonstrate knowledge and understanding of risk management tools, programs and processes associated with process safety.

- *COURSE LEARNING OUTCOMES**
- Demonstrate ability to apply principles of chemical engineering to design practical systems.
 - Participate in team-based projects to understand team operation and decision-making.
 - Gain experience in and appreciation of the need for individual learning about new systems, equipment, etc.
 - Understand the role of the engineer in promoting safe operation and consideration of environmental issues in technical decisions.
 - Develop an appreciation of current issues and challenges which you may well be addressing as professionals.

Calumet Department Head _____	Date _____	Calumet School Dean _____	Date _____
Fort Wayne Department Head _____	Date _____	Fort Wayne School Dean _____	Date _____
Indianapolis Department Head _____	Date _____	Indianapolis School Dean _____	Date _____
North Central Faculty Senate Chair _____	Date _____	Vice Chancellor for Academic Affairs _____	Date _____
<u>A Varma</u>	7/1/2012	<u>[Signature]</u>	2/29/12
West Lafayette Department Head _____	Date _____	West Lafayette College/School Dean _____	Date _____
		West Lafayette Registrar _____	Date _____

To: Faculty of the College of Engineering

From: Faculty of the School of Chemical Engineering

RE: New Undergraduate Course, CHE 43000, Process Safety Management

The faculty of the School of Chemical Engineering has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

CHE 43000: Process Safety Management

Sem 1, cr. 3, LEC 3

Concurrent Prerequisites: CHE 34800, CHE 37800

Description: Students will develop knowledge of process safety management in the process industries. This new course is being developed with significant input from industrial safety professionals and will prepare students for the safety problems they will encounter in industry. Course Outcomes: Demonstrate knowledge and understanding of the elements of process safety management. Be able to pro-actively identify and analyze safety hazards. Demonstrate knowledge and understanding of risk management tools, programs and processes associated with process safety.

Reason: The course has been taught as **Process Safety Management**, CHE 49700, in the spring 2011 semester of with 27 students, in the 2012 spring semester with 46 students, and in the fall 2012 semester with 47 students.

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE

ECC Minutes 11/12/12

Date 11/29/12

Chairman ECC [Signature]

A. Varma

A. Varma, Head
School of Chemical Engineering
Date: 7/1/12

Supporting Documentation – CHE 43000 Process Safety Management

Level: Undergraduate

Course Instructor: Mrs. Linda Davis

Textbook: *Guidelines for Risk Based Process Safety*, Center for Chemical Process Safety (CPPS), American Institute for Chemical Engineers, 2007.

Course Operation: Faculty lectures will be augmented by lectures from industrial and government safety professionals. Videos and reports on safety incidents will be incorporated.

- Topics:**
1. Process Safety Management and Hazard Identification
 - Legal – 29 CFR 1910.119
 - People
 - Technology
 - Facilities
 - Management/Leadership
 - Required Systems
 2. Analysis of Hazards
 - Hazard vs. Risk
 - Risk Matrix
 - What If Checklist
 - Hazard and Operability (HAZOP) Study
 - Failure Mode and Effect Analysis
 - Fault Tree Analysis
 3. Risk Management
 - Operating Procedures
 - Safe Work Practices
 - Asset Integrity and Reliability
 - Contractor Management
 - Training
 - Management of Change
 - Human Factors and Industrial Hygiene
 - Capital Project Execution
 - Operational Readiness
 - Operations: Start-up/Shutdown/Unsteady State
 - Emergency Management

- Incident Investigation
- Safety Culture: Models and Measurement
- Regulations and Audits
- Ethics and Safety
- Quality, Continuous Improvement and Safety

Course Objectives: Develop knowledge of process safety management in the process industries – including hazard identification, hazard analysis and risk management.

Course Outcomes: (numbers in parentheses refer to related educational outcomes for our undergraduate chemical engineering program)

- Be able to design a system, component, or process to meet desired technical, economic, safety, and environmental criteria
- Be able to utilize the techniques, analytical skills, and modern computational tools necessary for successful chemical engineering practice
- Understand and appreciate the need for professional integrity and ethical decision making in the professional practice of chemical engineering
- Demonstrate an understanding of contemporary issues encountered in the professional practice of chemical engineering including business practices, environmental, health, and safety issues and other public interests. Our graduate will be aware of the wide-reaching effects that engineering decisions have on society, our global community and our natural environment
- Demonstrate knowledge and understanding of the elements of process safety management;
- Be able to pro-actively identify and analyze safety hazards;
- Demonstrate knowledge and understanding of risk management tools, programs and processes associated with process safety.

Assessment Methods

for Outcomes: The outcomes will be assessed through homework assignments, quizzes and exams.