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.

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

PROPOSED:

Subject Abbreviation: CHE
Course Number: 43000
Long Title: Process Safety Management
Short Title: Process Safety Management

EXISTING:

Subject Abbreviation: 
Course Number: 

TERMS OFFERED:

Check All That Apply:
☐ Summer
☐ Fall
☐ Spring

CAMPUS(ES) INVOLVED:

☐ Calumet
☐ Cont Ed
☐ Ft. Wayne
☐ Indianapolis
☐ N. Central
☐ Tech Statewide
☐ W. Lafayette

CREDIT TYPE

1. Fixed Credit Cr. Hrs.: 3
2. Variable Credit Range: 
   Minimum Cr. Hrs. (Check One):
   ☐ To
   ☐ Or
   Maximum Cr. Hrs.
3. Equivalent Credit: Yes □ No □

COURSE ATTRIBUTES: Check All That Apply

1. Pass/No Pass Only
2. Satisfactory/Unsatisfactory Only
3. Repeatable
4. Credit by Examination
5. Fees □ Dept □ Lab □ Rate Request

☐ Registration Approval Type
☐ Variable Title
☐ Maximum Repeatability
☐ Full Time Privilege
☐ Off Campus Experience

SCHEDULE TYPE

☐ Lecture
☐ Recitation
☐ Presentation
☐ Laboratory
☐ Clinic
☐ Experiential
☐ Research
☐ Ind. Study
☐ Pract/Observe

Minutes Per Week:
Lecture 50
Recitation
Presentation
Laboratory
Clinic
Experiential
Research
Ind. Study
Pract/Observ

Meetings Per Week:
Lecture 3
Recitation
Presentation
Laboratory
Clinic
Experiential
Research
Ind. Study
Pract/Observ

Weeks Offered:
16
100

% of Credit Allocated

Cross-Listed Courses

OFFICE OF THE REGISTRAR

36-12
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.

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


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
   - 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.