

## CHE 491 – SPECIAL TOPICS: INDUSTRIAL SAFETY

Type (check one): Required: \_\_\_\_\_ Elective:  X

**2005-2006 Catalog Data:** Elective courses of special or current interest. Taught by faculty with special or unique qualifications. Taken by Juniors and Seniors. Prerequisites are announced with course offerings. *One semester; one to four credits.*

**Prerequisites:** CHEM 113 or 115; MATH 131 recommended

**Co-Requisites:** none

**Textbooks:** Crowl, D.A. and J.F. Louvar, *Chemical Process Safety: Fundamentals with Applications* (2<sup>nd</sup> ed.), Prentice-Hall, 2002.

**Other Required Materials:** Handouts by the instructor

**Other References:** none

**Instructor:** Dr. Randel M. Price, Associate Professor of Chemical Engineering

**Course Objectives:** At the end of the course, each student should be able to:

1. Discuss the importance of safety technology and management with industrial applications.
2. Explain occupational exposure limits and describe appropriate monitoring and protective steps
3. Discuss government regulations for workplace safety and management strategies for a safe workplace
4. Describe the nature of fires and explosions and basic steps for their prevention.
5. Describe the steps in a safety review or hazard identification review.

**Prerequisites by Topics:** 1. General chemistry

**Topics:**

1. Risk; ethical responsibility for safety
2. Toxicology; occupational exposure
3. Physical hazards
4. Process safety management
5. Fires and explosions
6. Hazard identification and safety review
7. Relief systems

**Class Schedule:** Three 50-minute sessions per week

**Prepared by:**  Randel M. Price, Ph.D.  **Date:**  3 January 2006

**Professional Component:**  
**CH E 491 – SPECIAL TOPICS: INDUSTRIAL SAFETY**

Category (check one)	<input type="checkbox"/> Math/Basic Science <input checked="" type="checkbox"/> Engineering <input type="checkbox"/> General Education <input type="checkbox"/> Other
Design (check one)	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Some <input type="checkbox"/> None
Realistic Constraints (check all that apply)	<input type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input type="checkbox"/> Sustainability <input type="checkbox"/> Manufacturability <input type="checkbox"/> Ethical <input checked="" type="checkbox"/> Health & Safety <input checked="" type="checkbox"/> Social <input checked="" type="checkbox"/> Political

**Relationship to Program Outcomes:**

Check all that apply:

- (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
- (d) an ability to function on multi-disciplinary 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 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