

## **ENFP411 Risk-Informed Performance Based Design**

*Credits:* Three (3)

*Contact hours:* Two lectures per week, 75 minutes each, one 50 minute discussion.

*Table 5-1 category:* Engineering topic with significant design component

*Instructor:* Hrybyk

*Textbook:* SFPE Engineering Guide to Performance-Based Fire Protection (2007), SFPE Handbook of Fire Protection Engineering (5th Edition). (Copies provided to students)

*Other supplemental materials:* N/A

### *Catalog description:*

Appraisal and measurement of fire safety. Application of systems analysis, probability theory, engineering economy and risk management in the identification and synthesis of components of fire protection engineering. Methods for the development of criteria for the design, evaluation and assessment of fire safety or component hazards. An integrative course in which students apply fundamental fire protection engineering concepts to the design or operation of a complex building.

### *Prerequisites and Corequisites:*

Restriction: Senior standing; or permission of ENGR-Fire Protection Engineering department.

*Table 5-1 Course Type:* Required

### *Specific outcomes of instruction:*

Upon completion of this course the students should be able to perform and present a comprehensive performance-based design of a building in accordance with prevailing professional standards.

*Student outcomes assessed:* SO2.1, SO3, SO4.2, SO5

### *Brief list of topics covered:*

Introduction to Course and Performance Based Design  
Hazard and Risk  
Project Review; Risk Management Approaches  
Risk & Hazard Analysis Tools (logic trees, fault trees, etc.)  
Engineering Economics  
Goals and Objectives – Performance Criteria  
Design Fires  
Design Brief and Report  
Probability, Reliability and Uncertainty  
System Performance Evaluation