

# SAFETY MANAGEMENT (ETSM)

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## **ETSM 2310. Introduction to Occupational Safety. 3 Hours.**

Students study safety and health issues and practices at work. Topics may include how and why accidents happen, what the total costs of accidents are, and how to use the risk management approach to achieve safety. Students are introduced to the concepts of reactive versus proactive practices and their role in creating sustainable businesses that protect both people and the environment. Safety-related governmental standards and various careers in safety are also examined.

## **ETSM 2396. Special Topic. 3 Hours.**

This course of faculty-led study is designed to provide exposure of undergraduate students to new safety management topics and concepts in a course setting. This course is designed to be a multi-topic course. The student can take the course under various special topics being offered.

**Prerequisite:** ETEC 1010.

## **ETSM 3323. Construction Safety. 3 Hours.**

Students learn to manage the safety and compliance responsibilities of construction projects. Students examine the most current Occupational Safety and Health Administration (OSHA) standards for construction and essential safety topics beyond general standards, such as accident-causation theories and ethics of construction safety.

**Prerequisite:** Junior standing or Instructor approval.

## **ETSM 3363. Safety Program Management. 3 Hours.**

This course presents an in-depth examination of the concepts, methods, and techniques involved in safety program management. Emphasis will be placed on the development of safety management programs for the industrial and construction industries. The strengths and weaknesses of existing safety programs, performance management techniques, behavior-based safety, design safety, legal aspects of safety and health management, and emerging trends in safety and health management will be covered. Course Equivalents: ETSM 4363, ITEC 4363

**Prerequisite:** Junior standing.

## **ETSM 3371. Systems Safety & Risk Assessment. 3 Hours.**

Students examine concepts, methods, and techniques involved in safety risk management. Emphasis is placed on the development of safety programs for the industrial and construction industries. Topics may include an overview of risk management processes, attributes, and disciplines; identification tools; analysis and evaluation; communication; risk analysis approach; and assessment framework.

**Prerequisite:** Junior Standing and MATH 3379 and ETEC 1010 and MATH 1314 or MATH 1410 or MATH 1420.

## **ETSM 3372. Occupational Safety Standards. 3 Hours.**

Students examine the Occupational Safety and Health Act (OSHA), its rules, and the legal duty to comply with them. Topics may include record keeping, employers' and employees' rights, hazard communication, inspection and investigation, and criminal enforcement of violations. Contesting citations, judicial review of enforcement actions, and ethics in safety at the workplace may also be reviewed.

**Prerequisite:** ETEC 1010 and ETSM 3386 or ETSM 2310.

## **ETSM 3380. Accident Investigation & Analysis. 3 Hours.**

Students explore aspects of safety analysis needed for accident investigation. Activities include examining theory of accident investigation; gathering, analyzing, and reporting data; and developing safety recommendations and corrective actions to prevent future accidents. Students apply analytical techniques of accident investigation to understand the strengths and limitations of these techniques.

**Prerequisite:** ETSM 3371 or MATH 3379.

## **ETSM 3386. Industrial Safety. 3 Hours.**

This course is a study of the problems involved in developing an integrated safety program for an industrial or commercial establishment. It involves safety education, safe worker practices, recognition and elimination of health hazards, machinery guards, in-plant traffic, material handling and emergency treatment for industrial accidents. Course Equivalents: ETSM 4382, ITEC 4382

**Prerequisite:** ETEC 1010 and Junior standing.

## **ETSM 4096. Directed Study. 1-6 Hours.**

Arranged professional and developmental learning experiences incorporating a practical application of safety management skills and practices. To include internships, individual research and industry studies. Variable Credit (1-6).

**Prerequisite:** Sophomore standing.

## **ETSM 4313. Industrial Hygiene. 3 Hours.**

Students explore the field of industrial hygiene, including the chemical, physical, and biological agents that affect the health and safety of employees. Students learn procedures for measuring and controlling various agents, threshold limit values for these agents, and concepts regarding occupational health toxicology.

**Prerequisite:** CHEM 1411 and MATH 1410 or MATH 1314 or MATH 1324 or consent of instructor.

## **ETSM 4335. Human Factors & Ergonomics. 3 Hours.**

Students learn the foundations of human-centric engineering to design products, processes, and systems to optimize human well-being and overall system performance. Students apply principles of anthropometrics, the musculoskeletal system, biomechanics, psychophysics, work physiology, and engineering safety to common problems faced by safety professionals in work and systems design. Emphasis is on design and analysis of occupational systems and consumer products.

**Prerequisite:** MATH 1314 or MATH 1316 and Junior standing.

**ETSM 4345. Industrial Fire Safety. 3 Hours.**

Students learn to incorporate fire hazard awareness and protection into safety management plans. Topics may include fire prevention methods, extinguishment, detection, hazards, fire behavior, fire causes, types of building materials, structural features, flame spread, room/building occupancy, fire load, and inspection techniques.

**Prerequisite:** CHEM 1411 and PHYS 1301.

**ETSM 4369. Special Topic. 3 Hours.**

This course of faculty-led study is designed to provide exposure of undergraduate students to new safety management topics and concepts in a course setting. This course is designed to be a multi-topic course. The student can take the course under various special topics being offered.

**Prerequisite:** ETEC 1010 and Junior Standing.

**ETSM 4375. Safety Hazard Mitigation. 3 Hours.**

Students learn concepts, methods, and techniques involved in creating industrial and manufacturing facilities more resilient to the impacts of hazards. The students are provided with the tools to develop safety programs emergency managers can use to reduce the impact of different types of hazards. Emphasis is placed on mitigation, preparedness, resilience, measurement, and vulnerability. Topics may include risk management and communication, practical approaches, and assessment frameworks.

**Prerequisite:** ETSM 3371.

**ETSM 4377. Environmental Safety Management. 3 Hours.**

Students examine the principles of effective environmental safety management systems. Laws and regulations that protect our environment and human health are studied. Topics may include hazard communication (HAZCOM) and hazardous waste operations (HAZWOPER). Students may also examine the roles of the Occupational Safety and Health Administration (OSHA), the U.S. Department of Transportation (DOT), and the Environmental Protection Agency (EPA).

**Prerequisite:** ETSM 3372.

**ETSM 4379. Emergency Management & Planning. 3 Hours.**

Students learn a hands-on approach to emergency management and contingency planning in different work environments. Emphasis will be placed on key partnerships among all levels of government as well as those among the public and private industrial sectors. The topics may include physical and chemical hazards and biohazards, personal training, holistic planning, medical surveillance, personal protective clothing and equipment, hazard and risk reduction strategies, decontamination, related scientific data and information management.

**Prerequisite:** ETSM 3371.