

FSE—Fire and Safety Engineering Technology
Mr. Shane LaCount, Coordinator

FSE 100 Introduction to Fire and Safety Engineering Technology. (1) A.

Historical and philosophical discussion with review of the life and property conservation functions of federal, state, municipal, and private agencies. Study of legislation, contemporary, and future problems, career opportunities, and public fire safety education programs.

FSE 101 Fire Prevention. (3) A.

An introduction to fire and safety related codes; fire prevention methods; mechanical systems; and engineering solutions for hazards. An in-depth look at the Life Safety Code, the function and testing of fire related building components.

FSE 120 Fire Behavior and Combustion. (3) A.

Introduction to the chemistry and dynamics of fire; including basic terminology and concepts that are applied to the physical and chemical properties of the development and spread of fire in a structure; hazardous materials and the Computer Fire Analysis.

FSE 200 Applied Fire and Safety Analysis (3) A.

Analytical and statistical concepts and procedures for the treatment of fire and safety related data. Includes quantitative and qualitative techniques, descriptive and inferential statistics.

FSE 201 Building Construction. (3) A.

A review of the analysis of building construction methods and terminology. A systems approach to designing building fire safety; the Life Safety Code; the function of and testing of rated building components, evaluating plans for code compliance.

FSE 221 Fire Protection Systems. (3) A.

Prerequisites: FSE 101, FSE 120. Introduction to fire detection, protection, control systems and extinguishment. Fixed and portable systems of the following types will be studied: automatic sprinklers, standpipes, dry chemical, foam, halogenated agents, fire alarm systems and diction.

FSE 223 Fire and Emergency Scene Operations (3) A.

Prerequisite: FSE 201. Principles of Incident Management including emergency scene decisions, strategies, and tactics. Utilizing emergency control resources such as personnel, apparatus, and equipment.

FSE 225 Legal Aspects of Fire Protection and Safety. (3) A.

A study of legislative and legal decisions relating to personnel practices, employee safety, and public protection. Emphasizes the legal responsibilities, liabilities, and authority of the fire service practitioner.

FSE 230 Fire Prevention Organization and Management. (3) A.

Prerequisite: FSE 101. An introduction to management issues related to fire prevention systems. Overview of the requirements for fire prevention codes, managing inspections, relations with public and officials and implementation of fire education programs.

FSE 250 Introduction to Fire Arson and Explosion Investigations. (3) A.

An introduction to fire, arson, and explosion investigation. Topics include a historical overview of arson and terrorism statutes, sources of information, the federal role in fire and explosion investigation, explosives and improvised explosive devices.

FSE 300 Technical Report Writing for Emergency Services. (3) A.

Develop oral and written communication skills specific to the public emergency service sector's needs. Focusing on the technical aspects involved in supporting public initiatives operating within the legal system and learning the specific requirements for submitting documentation to various technical committees.

FSE 301 Emergency Medical Treatment I. (6) A.

Effective emergency medical care in a variety of traumatic and medical emergencies. Content developed by the Committee on Injuries of the American Medical Association. Credit will not be awarded to students who have credit for EMC 110.

FSE 305 Hazardous Materials. (3) A.

Prerequisite: FSE 120. Study of hazardous material problems in transportation, storage, and use. Chemical properties relating to specific reactions, engineering controls, and control in an emergency situation. Emphasis on the role of pre-emergency planning, combating, coordinating, and controlling a hazardous materials incident.

FSE 310 WMD/Hazardous Materials. (3) A.

Study of different Weapons of Mass Destruction (WMD) materials, deployment, and use. Evaluation of hazardous materials, usage, storage, and transportation. Preventing and controlling WMD/Hazardous Materials incidents.

FSE 320 Principles of Emergency Services. (3) A.

An overview of organizational and management practices in the fire and safety fields. Emphasis on supervision and leadership styles, motivation, morale, and organizational behavior.

FSE 322 Fire Protection Structures and System Design (3) A.

Prerequisite: FSE 221. Analysis and evaluation of specific code requirements related to the design, inspection, testing and maintenance of fire protection systems. Design projects will be included.

FSE 349 Applied Learning in Fire and Safety Engineering. (1-8) A.

Prerequisite: departmental approval. Work in placements related to academic studies. One to eight hours credit per semester or summer. Total hours: eight, associate; sixteen, baccalaureate. A minimum of 80 hours employment required for each semester hour credit.

FSE 349 A-N Cooperative Study: Fire and Safety Engineering. (1-8) A.

Prerequisite: departmental approval. Work in placements related to academic studies. One to eight hours credit per semester or summer. Total hours: eight, associate; sixteen, baccalaureate. A minimum of 80 hours employment required for each semester hour credit.

FSE 350 Fire Arson and Explosion Investigation I. (3) A.

Prerequisite: FSE 120. An in-depth study in the analysis of fire, arson, and explosion scenes. Emphasis will be placed on the principles and techniques of scene preservation and analysis, management of investigative functions, documentation of the scene, and determination of the cause and origin of fire.

FSE 355 Fire Dynamics. (3) A.

Prerequisites: CHE 101, FSE 120, and MAT 107. An introduction to fire-related measurement techniques, advanced fire and combustion concepts and associated terminology. This course includes basic numerical methods for understanding fire dynamics.

FSE 360 Fire Protection Hydraulics and Water Supply (3) A.

Prerequisites: FSE 120 and MAT 107. A study of water at rest and in motion, Bernoulli's and Pascal's theorems; water distribution systems, velocity, friction loss, pump and nozzle pressures required for fire protection.

FSE 361 Principles of Occupational Safety and Health (3) A.

History of the development of occupational safety and health. Methods of accident prevention and hazard control. Introduction to safety programs, workers' compensation, emergency preparedness and accident investigation.

FSE 362 Principles of Occupational Safety and Health Legislation (3) A.

Corequisite: FSE 361. Review of OSHA standards with emphasis on compliance and liability reduction. Discussion of OSHA regulations including citations, penalties, inspections, and record keeping.

FSE 365 Instructional Methodology for Emergency Service. (3) A.

Course provides students with opportunities to develop presentation skills used in classroom instruction. Develop lesson plans, prepare audio-visual aids and props for the class. Prepare evaluation methodologies that competently assure learning objectives during delivery of presentations.

FSE 366 Hazard Identification and Control (3) A.

Prerequisite: FSE 361 or departmental approval. Hands-on approach toward identification and control. Areas of study include noise levels, chemical and electrical hazards, air contaminants, and heat/cold stress. Control measures include administrative, engineering, and safeguarding methods.

FSE 367 Human Factors in Occupational Safety. (3) A.

Prerequisites: BIO 171 and PHE 320. Focuses on ergonomics, man/machine interface and human efficiency. Study of work-related stress, psychological factors, and Cumulative

Trauma Disorders. Solutions are reviewed for common problems found in labor-intensive operations.

FSE 370 Electrical and Mechanical Systems Failure Analysis. (3) A.

Prerequisite: FSE 355. Overview of design criteria for electrical and mechanical systems and components relative to fire safety via laboratory experiments, exemplar components and photographs that depict system and component failures that result in fire. Learning opportunities include engaging in destructive and nondestructive analysis of components and systems.

FSE 375 Emergency Service Resource Management. (3) A. Introduction to management issues related to obtaining and accounting for resources. Included are financial management processes, acquisition strategies, strategies for maintenance of effort and resource prioritization, resource replacement planning and processes to audit program success.

FSE 379 Construction Safety. (3) A.

Prerequisite: FSE 362. An in-depth analysis of the federal and Commonwealth of Kentucky's OSHA requirements for construction safety.

FSE 380 Fire and Explosion Scene Analysis. (3) A.

Prerequisite: FSE 350. An in-depth study of fire, arson, and explosive investigations. Emphasis will be placed on the principles and techniques of scene preservation, analysis, management of investigations, documentation of the scene and determination of cause and origin.

FSE 390 Workers Compensation I. (3) A.

Prerequisite: junior standing. An in-depth study of the foundations of Workers Compensation law. Emphasis will be placed on the history and theory of injuries "arising out of" and being "in the course of" employment.

FSE 400 Advanced Emergency Services. (3) A.

Prerequisites: FSE 300 and 320. A study of environmental management including the identification and analysis of key managerial issues confronting contemporary fire services managers. Application in current methods and planning, organizing, developing and evaluating public fire/emergency services organizations.

FSE 410 System Safety Analysis. (3) A.

Prerequisite: FSE 361 or departmental approval. Evaluation of the probabilities and consequence of various risks. Study includes system safety analysis, job safety analysis, hazard analysis, and faulty tree analysis. Safety audit methods are reviewed.

FSE 412 Safety and Health Program Management. (3) A.

Prerequisites: FSE 200, 362, and 366; or departmental approval. Emphasis on personnel aspects, communication, and motivation in managing safety and health programs. Practice in writing safety programs and implementing safety training. Evaluation of the effectiveness of various methods and programs.

FSE 420 Environmental Law and Management. (3) I, II.

Prerequisite: FSE 225. Review/analysis of laws affecting workplaces, including the Clean Water Act, Clean Air Act, RCRA and CERCLA. Additionally, study of these laws and related policies/practices will be covered as related to safety. Credit will not be awarded to students who have credit for EHS 425.

FSE 425 Disaster & Community Fire Defense Planning. (3) A.

Prerequisite: FSE 300. Overview of the ever changing demographics of the departmental jurisdictions and response during community service master planning, identifying hazards then assessing risks associated with those hazards. Analysis of potential disaster and recovery methods.

FSE 430 Personnel & Industrial Relations Law. (3) I, II. Prerequisite: FSE 225. Review/analysis of laws affecting the workplace, including the ADA, FMLA, NLRA, WARN Act, and Title VII. Additionally, a study of personnel policies/practices will be covered as it relates to the field of safety.

FSE 450 Advanced Explosion and Bombing Investigation. (3) A.

Prerequisite: FSE 380. An in-depth study of explosion scene investigation. Emphasis will be placed on the principles and techniques of scene preservation analysis, management of investigative functions, documentation of scene, and determination of the cause of explosions.

FSE 489 Topical Seminar: _____. (1-3) A.

Prerequisite: FSE 200 or departmental approval. Development and presentation of research in contemporary methods, techniques, and devices in the field. May be retaken under different topics to a maximum of 12 hours.

FSE 490 Fire and Safety Research and Evaluation (3) A.

Prerequisite: senior standing. Development of competency relating to concepts of fire and safety research analysis. Each student develops a research design and carries out a study project. Individual studies are culminated with project paper and presentation.

FSE 492 Workers Compensation II. (3) A.

Prerequisite: FSE 390. An in-depth study of the management of a workers compensation program. Emphasis will be placed on learning the provisions of the Kentucky Workers Compensation Act and the processing and management of worker compensation claims.

FSE 495 Fire Arson and Explosion Case Preparation. (3) A.

Prerequisite: FSE 450. Preparation of the fire, arson, and explosion case for trial, including preparation of demonstrative evidence, scene documentation for presentation, rules of evidence, case review and analysis, and testimony.

FSE 499 Practicum. (1-12) A. Prerequisite: departmental approval. Supervised field observation, research, and/or experience.