Courses

SFTY 201 Introduction to Health, Occupational, and Transportation Safety 3 Credits (3.0)
This course introduces the student to the basic health and safety concepts associated with industry and transportation. Included are a comprehensive health and safety overview, a historical study of the legislative development and enactment of appropriate statutes, regulations and laws, the definition of safety terms, and a discussion of the ethics and professionalism required by the health and safety profession. This course also provides an introduction to the hazard recognition and reporting, evaluation, and control concepts used in risk management, accident investigation, ergonomics, and accident prevention.

SFTY 205 Principles of Accident Investigation 3 Credits (3.0)
This course is an introduction to the process required for the investigation of accidents. Topics will include different methods of accident investigation, such as root cause analysis and Management Oversight Risk Tree (MORT), among others. Further topics will include filing appropriate accident reports and applications of corrective actions.

SFTY 210 Introduction to Aerospace Safety 3 Credits (3.0)
This course provides an introduction and overview of the theories, concepts, applications and practices of the field of aerospace safety. This course is designed for the beginning aviation safety student and covers topics such as human factors, mechanical factors, accident investigation, safety programs and safety statistics.

SFTY 299 Special Topics in Safety 1-3 Credit (1-3.0)
These courses consist of individual independent or directed studies of selected topics in safety. Prerequisites: Consent of instructor, approval of department and program chairs, and 12 hours of SFTY courses.

SFTY 311 Fundamentals of Occupational Safety and Health 3 Credits (3.0)
The student will be provided an introduction and overview of the Occupational Safety and Health (OSH) Act and how provisions of the Act are implemented in the workplace. The course is designed for the beginning safety student and is a prerequisite for most of the higher-level safety courses. Material presented covers the rights and responsibilities under the OSH Act, the appeals process, recordkeeping, and voluntary protection programs. The course also includes an introduction to OSHA’s general industry standards and an overview of the requirements of the more frequently referenced standards.
Prerequisites: RSCH 202.

SFTY 315 Environmental Compliance and Safety 3 Credits (3.0)
This course examines matters associated with health and safety relating to the environment including air, water quality and sanitation. Areas of concentration include hazardous materials, their storage, handling, and transportation. Additional study includes waste management and cleanup as well as a detailed study of environmental laws, regulations, and protection of workers involved in activities associated with hazardous material activities.
Prerequisites: RSCH 202.

SFTY 320 Human Factors in Aviation Safety 3 Credits (3.0)
This course focuses on the major causative agent in aircraft accidents: the human being. Emphasis is placed on psychological and physiological factors that enhance the accident probability. Included is a detailed analysis of ergonomics (human engineering) and its influence in aviation design.
Prerequisites: RSCH 202.

SFTY 321 Ergonomics 3 Credits (3.0)
The concepts and physiological aspects of ergonomics will be examined in this course. Material presented covers anthropometric principles in workspace and equipment design, workspace design, human-machine systems, analysis and design of displays and controls, and environmental factors affecting work environment.
Prerequisites: RSCH 202.

SFTY 326 System Safety 3 Credits (3.0)
This course will emphasize the specialized integration of safety skills and resources into all phases of a systems life cycle. Topics will include qualitative and quantitative tools and techniques for system analysis and design applied to accident analysis, prevention, and mitigation.
Prerequisites: RSCH 202.

SFTY 330 Aircraft Accident Investigation 3 Credits (3.0)
This course is a detailed evaluation of methods and procedures involved in aircraft accident investigation. The organization, duties and procedures of an aircraft board are analyzed. The student explores procedures for determining accident causes through analysis of such elements as the function and techniques employed by the trained accident investigator and the role of the specialized laboratory. Analysis is also made of reporting procedures and the all-important follow-up work designed to avoid similar or related aircraft accidents.
Prerequisites: RSCH 202.

SFTY 335 Mechanical and Structural Factors in Aviation Safety 3 Credits (3.0)
This course examines the influence that design, manufacturing, metallurgy, and maintenance have on aircraft accidents. A detailed analysis of the failure process will be conducted. Additional topics of discussion include: stress and design loading, fatigue, corrosion, and the envelope of operation.
Prerequisites: RSCH 202.

SFTY 341 Occupational Safety and Health Program Management 3 Credits (3.0)
Students will learn about the principles of the development and management of materials, techniques, and procedures used in the implementation of occupational safety and health programs and their application in a variety of occupational settings. Examined will be the management techniques, governmental regulations, and safety and health programs developed for industry. The course will focus on the history of the safety and health movement; government regulations; safety and health program organization; hazard identification and evaluation process; and implementation of an occupational safety and health program.
Prerequisites: RSCH 202.

SFTY 345 Aviation Safety Program Management 3 Credits (3.0)
This course is a study of the principles of the development and management of an effective safety program. The philosophy and historical development of major concepts are examined with particular emphasis on areas of special concern in organizational accident prevention. Students analyze the influence of morale, education and training, the role of the supervisor, and other substantial program elements of value to the safety manager.
Prerequisites: RSCH 202.

SFTY 350 Aircraft Crash and Emergency Management 3 Credits (3.0)
Theory, practices and techniques utilized in the response phase of aircraft crashes and emergencies are examined. This course is designed as a “real world” introduction to the field of emergency response at the CFR agency level, the airport response and administration levels and the related and associated entities involved in aircraft mishaps.
Prerequisites: RSCH 202.

SFTY 355 Industrial Hygiene and Toxicology 3 Credits (3.0)
This course focuses on the evaluation of principles associated with industrial hygiene. Topics include recognition, evaluation and control of hazards related to noise, vibration, ionizing and non-ionizing radiation, thermal conditions, pressure, chemicals, airborne contaminants, and biological substances. These subjects will be discussed in relation to all regulatory requirements, using both engineering and non-engineering controls for reducing or eliminating health hazards in the workplace.
Prerequisites: PHYS 102 or PHYS 160 and SFTY 311 and RSCH 202.
SFTY 360 Construction Safety 3 Credits (3.0)
The student is provided with an opportunity for an in-depth study of construction safety and the importance of safety and health in the construction industry. The Code of Federal Regulations (29 CFR 1926) governing the construction industry will be examined. The focus is the management and application of the regulations in the workplace, typically through safety inspections, job safety planning, organizing and conducting health and safety training, investigating and maintaining records of construction accidents, incidents, and injuries and illnesses.
Prerequisites: RSCH 202.

SFTY 365 Fire Protection 3 Credits (3.0)
This course introduces the basics of fire and fire protection. Students will study the physics, chemistry, characteristics and behavior of fire, fire hazards of material, fire suppression systems, extinguishing agents, and detection and alarm systems. Primary emphasis will be on transportation related fire hazards and the regulatory requirements associated with air, rail, marine, and highway modes of transportation.
Prerequisites: PHYS 102 and SFTY 311 and RSCH 202.

SFTY 375 Propulsion Plant Investigation 3 Credits (3.0)
A technical course in aircraft reciprocating and turbine engine fundamentals and relevant accident investigative procedures. Areas of study include basic construction and design with emphasis on major sections, components, and their mechanical relationships. Power plant systems and system mishap investigation is also covered and includes fuel, lubrication, ignition, and start systems. A study of propeller basics and investigative techniques is also included. On site field investigation as well as engine teardown/disassembly procedures are presented.
Prerequisites: RSCH 202.

SFTY 399 Special Topics in Safety 1-3 Credit (1-3.0)
These courses consist of individual independent or directed studies of selected topics in safety. Prerequisites: Consent of instructor, approval of department and program chairs, and 12 hours of SFTY courses.

SFTY 409 Aviation Safety 3 Credits (3.0)
This course covers all facets for an aviation safety program including both flying safety and safety of ground operations. Major problem areas in aviation safety, safety program evaluation, and impact of accidents on industry are covered. Focus is on human factors, basic accident prevention programs, and the roles of various government and industry organizations have in preventing accidents.
Prerequisites: RSCH 202.

SFTY 410 Design of Engineering Hazard Controls 3 Credits (3.0)
This course addresses the application of scientific and engineering principles and methods to achieve optimum safety and health through the analysis and design of processes, equipment, products, facilities, operations and environments. Subjects will include; product design, plant layout, construction maintenance, pressure vessels and transportation vehicles and systems. These subjects will be discussed in relation to all regulatory requirements.
Prerequisites: PHYS 102 and SFTY 311 and RSCH 202.

SFTY 415 Human Reliability and Safety Analysis 3 Credits (3.0)
This course will emphasize an understanding of probability and human reliability as an important technique in safety analysis. Topics will include qualitative and quantitative tools and techniques for human reliability analysis applied to accident analysis, prevention, and mitigation.
Prerequisites: RSCH 202.

SFTY 420 Systems Design for Fire & Life Safety 3 Credits (3.0)
This course centers on design principles involved in building construction standards and building codes to ensure maximum life and property safety from fires, explosions, and natural disaster. Egress design specifications, occupancy and construction classifications, and fire protection requirements for buildings will be covered.
Prerequisites: PHYS 102 and SFTY 311 and RSCH 202.

SFTY 421 Ergonomics II 3 Credits (3.0)
This course is an extension of SFTY 321 - Ergonomics. SFTY 421 will explore in greater depth human factors and its relationship to ergonomics in organizational and social environments, as well as the relationship between ergonomics and general workplace safety. In addition, the course will explore how human factors can improve occupational safety, and how one may predict and analyze hazards in order to design and engineer safer industrial workplaces.
Prerequisites: SFTY 321 and RSCH 202.

SFTY 435 Aircraft Crash Survival Analysis and Design 3 Credits (3.0)
This course provides an in-depth analysis of the accident environment, with particular emphasis on the protection of the occupants. The injury mechanisms and causes will be analyzed, as will the physics and kinematics of the impact sequence. The intent of the course is to familiarize the student with what can be done to minimize the effects of an accident.
Prerequisites: RSCH 202.

SFTY 440 System Safety Management 3 Credits (3.0)
This course reviews the development and implementation of the system safety discipline in technical industries, including aviation. "System Safety" entails specialized integration of skills and resources in all phases of the life cycle of a given system in furtherance of accident prevention. Its heritage is systems engineering and management theory but amplified to include modern safety practices derived from numerous disciplines. Students will acquire an understanding of how safety is designed into equipment, processes, and facilities under development, evaluated and enhanced during testing, and assured or otherwise controlled during operational use.
Prerequisites: RSCH 202.

SFTY 450 Loss Control & Insurance 3 Credits (3.0)
The principles of loss control, insurance, and financial risk management, as they apply to the SHE (Safety, Health, and Environmental) professional, are studied in this course. The basic concepts of financial risk management, legal principles, property and liability insurance, life and health insurance, employee benefits, social insurance, and functional and financial operations of insurers will be examined. Primary emphasis is placed on consumer considerations, coverage of personal risk management, and financial planning.
Prerequisites: RSCH 202.

SFTY 462 Health, Safety and Aviation Law 3 Credits (3.0)
This course introduces the student to the legal issues and concerns confronting the health and safety industry. Included is an overview of the historical legal precedence established for the aviation industry as well as a comprehensive examination of the laws, regulations and legislation that governs the actions and authority of the health and safety professional. This course also provides an introduction to the governing bodies and associations tasked with setting the legal standards by which the industry must operate, including the scope and level of their authority.
Prerequisites: RSCH 202.

SFTY 470 Advanced Occupational Safety and Health Technology 3 Credits (3.0)
This course is the culminating experience that derives from previous work in the occupational safety and health technology field. In this course, a heavy emphasis is placed on the analysis of previously learned occupational safety and health theories and concepts so as to determine their appropriate application. A secondary emphasis is placed on the horizontal integration of these theories and concepts in a practical framework, which will serve as professional guidance for the practicing Occupational Safety and Health Technologist. Students will draw on previous occupational safety and health studies, and develop and defend an in-depth analysis of an occupational safety and health issue in a program or business of their choice.
Prerequisites: SFTY 311 and SFTY 341 and SFTY 355 and RSCH 202.
SFTY 499 Special Topics in Safety 1-3 Credit (1-3,0)
These courses consist of individual independent or directed studies of selected topics in safety. Prerequisites: Consent of instructor, approval of department and program chairs, and 12 hours of SFTY courses.