



Occupational Safety, Health, and Environment (OSH&E) Program
Department of Computer Science and Industrial Technology
Southeastern Louisiana University
SLU 10847
Hammond, LA 70402

May 20, 2009

Dear OSH&E Industrial Advisory Committee Member,

On behalf of Southeastern Occupational Safety, Health, and Environment (OSH&E) Program, we would like to give our sincere appreciation for your involvement in the OSH&E Industrial Advisory Committee as well as your participation in the meetings and discussion.

Enclosed please find the report of the OSH&E Industrial Advisory Committee meeting that was held on April 24, 2009. Please feel free to let us know should you have your questions and comments!

Our first meeting for the upcoming 2009-2010 academic year will be held as part of the Annual Department Industrial Advisory Committee Meeting. The meeting is usually scheduled sometime in October at the Hammond campus. A formal letter will be sent to you when the meeting date and venue are determined.

Thank you very much for your consistent contribution to the program!

Sincerely,

Mr. Lawrence Maerman
Coordinator, OSH&E

Dr. Lu Yuan
Assistant Professor

Ms. Dorinda Folse
OSH&E IAC Chairperson

OSH&E Program
Industrial Advisory Committee
April 24, 2009 Meeting Report by Ms. Dorinda Folse and Dr. Lu Yuan

The last Occupational Safety, Health, and Environment (OSH&E) Industrial Advisory Committee (IAC) meeting was held from 11:30 AM to 2:30 PM on April 24, 2009 in Anzalone Hall 214 at the Hammond campus. (Please see the attached example photos!) The attendees include twelve of the seventeen OSH&E IAC members (Appendix A with updated information). Ms. Dorinda Folse, the OSH&E IAC Chairperson, hosted the meeting. Mr. Lawrence Mauerman, Drs. Ephraim Massawe and Lu Yuan, the three full-time faculty members of OSH&E program, were the co-hosts. Two current OSH&E students, Daniel Rice and Jake Valenti, were present. Drs. Peter Territo and Cris Koutsougeras attended the meeting as well. Special guests include Dr. Michelle Hall, Director of the University Institutional Research & Assessment Office, and Lenny Young, DEQ (Louisiana Department of Environmental Quality) Ombudsman. Absent were Steven Pereira, Richard Matherne, James Kerr, Don Steadman, and Michael Gautreaux.

Appendix B includes the agenda of the meeting, which started with the welcoming and introduction from Ms. Dorinda Folse. Ms. Folse provided an update on OSHA. She informed the committee that while there was still no Assistant Secretary of Labor that Jordan Barab had been appointed as a Deputy Assistant and was currently the Acting Assistant Secretary of Labor. She said that by all indications there would be an increased emphasis on enforcement and there is anticipation that more compliance officers would be hired nationwide as well as in Louisiana. The attendees then introduced themselves and a short break was held for lunch.

When the meeting resumed, items on the agenda were discussed in order. Under old business, Mr. Mauerman first reported the OSHE course objective development. A sub-committee consisted of OSH&E full-time faculty members, adjunct instructors (Steven Pereira, Richard Matherne, James Kerr, and Wayne LaCombe) and Rick Saizan, conducted two meetings on Mar.13 and Apr.3 to review and modify the existing OSHE course specification sheets using Bloom's Taxonomy. The sub-committee members focused on the examination of course objectives, and also reviewed other course materials including textbook, course syllabus, final project guideline, assignments, and exams. As a result, the OSHE course specification sheets were updated (Appendix C).

Dr. Yuan then explained the development of rubric for assessing OSH&E program outcomes (Appendix D). As recommended by ABET, the rubric uses a set of categories developed from the performance criteria to define and describe progression toward meeting important components of work being completed, critiqued, or assessed. Such a development will be extremely helpful in an objective evaluation of the program. The next step would be to collect relevant data and information to testify the rubric.

In terms of the OSH&E website (Appendix E), more information about the program including program brochure, OSH&E faculty (both full-time faculty members and adjunct instructors), OSH&E Industrial Advisory Committee, internship information, and scholarships has been added. The ASSE Greater Baton Rouge Chapter has helped to rebuild the ASSE Southeastern Student Section website, which will be live very soon. A call for a short biography was made. As

of now, eight bios have been received. It is greatly appreciated that other committee members could send the bios to Dr. Yuan ASAP.

Next, Dr. Yuan presented the results of OSH&E program questionnaire that was distributed in the last two quarterly meetings. A total of nine completed questionnaires were received and analyzed. Overall, the committee members felt positive about the OSH&E program. There are comments and suggestions such as the program should add environmental aspects, emphasize communication skills, include business accounting fundamentals, build research labs, and acquire industry support, etc. It is also suggested that the full-time faculty members gain more industry experiences and achieve better command of language.

The last item under old business was the updated OSH&E curriculum sheets for advising (Appendix F). As explained in the previous meetings, these new sheets represent the approved change on the OSH&E AAS and BS curricula for the upcoming academic year.

Based on the recommendations from the committee members, a list of professional electives from other disciplines including industrial technology, accounting, criminal justice, health studies, and biostatistics, was proposed to be included in the updated OSH&E BS curriculum. Mr. Mauerman presented those courses to the meeting attendees and asked for feedback. Mr. Alan Rovira suggested including the most current technology trends and needs into the consideration of new courses within OSH&E.

Dr. Territo presented the internship update. He explained some of the important items in the internship course package that were sent out to the committee members during the semester.

Mr. Mauerman announced to the group that an application for the James A. Oppold Fund from the ASSE Foundation has been submitted. This fund provides grants up to \$3,500 for universities & colleges seeking ABET Accreditation of Safety & Health Programs. The decision will be made in the end of June. Dr. Yuan added that based on the ABET requirements, the tentative plan was to submit the ABET self-study by the end of 2009 and request that the site visit be completed in September 2010.

Regarding the industrial support, Mr. Mauerman and Dr. Yuan shared the experiences and feelings of the site visit to the Safety Technology Program at Nicholls State University with the meeting attendees. A list of organizations, agencies, and resources where potential sponsorship can be achieved were provided by the committee members, including AGC, ABC - Chapters of N.O. & B.R., GBRIA, GNOIC (round table), benefactors/alumni, and companies. Some members also suggested that the OSH&E program should target industries including tourism/motion pictures and logging.

A recognition certificate was awarded to each committee member at the end of the meeting. The great support and contribution from each member to the program were very much appreciated. Given that the foundation work for the program accreditation has been built, it was suggested that the future OSH&E IAC meetings be conducted on a semi-annual or semester basis. The meeting attendees agreed with this proposal. The meeting adjourned at 2:30 PM.





Appendix A
OSH&E Program
Industrial Advisory Committee

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Appendix B
OSH&E Program
Industrial Advisory Committee

Quarterly Meeting Agenda

April 24, 2009

<u>Time</u>	<u>Issues</u>	<u>Actions</u>
11:30 - 11:45 am	Welcome & Introduction (By Ms. Dorinda Folse)	
11:45 am - 12:15 pm	Lunch	
12:15 - 1:00 pm	Old Business	
	1. OSHE Course Objective Development (By Mr. Lawrence Mauerman)	
	2. Rubric for Assessing OSH&E Program Outcomes (By Dr. Lu Yuan)	
	3. OSH&E Website Update (By Dr. Lu Yuan)	
	4. OSH&E Program Questionnaire (By Dr. Lu Yuan)	
	5. OSH&E Curriculum Sheets (By Mr. Lawrence Mauerman)	
1:00 - 2:00 pm	New Business	
	1. Professional Electives for OSH&E BS Program (By Mr. Lawrence Mauerman)	
	2. Internship Update (By Dr. Pete Territo)	
	3. Tentative request of ABET site visit (By Mr. Lawrence Mauerman & Dr. Lu Yuan)	
	4. Industrial Support Request Update (By Ms. Dorinda Folse & Dr. Lu Yuan)	
	5. Recognition Certificate (By Mr. Lawrence Mauerman)	
2:00 - 2:15 pm	1. Decision on Frequency of Future Meetings 2. Portraits & Bios	

Appendix C
Course Specification Sheet
OSHE 111 Introduction to Occupational Safety & Health

Course Description:

This course presents general safety and health concepts and terms, historical developments, program concepts and terms, legislative overview including worker's compensation law, problem identification, hazard recognition, evaluation and control concepts, and program management.

Minimum Topics:

1. Historical Perspectives
2. Safety and Health Professions
3. Theories of Accident Causation
4. Regulatory History
5. Workers' Compensation
6. Loss Control Programs
7. Injury and Illness Record Keeping
8. Identifying Hazards
9. Safety Audit & Inspection
10. Accident Investigation and Analysis
11. Computers and Information Management
12. Safety Training & Promoting Safety

Course Objectives:

1. Describe the history of the safety movement in the United States, including significant safety legislation and the importance of worker's compensation.
2. Describe important sources of loss control information.
3. Explain how loss control information is analyzed and used to develop effective loss control programs.
4. Relate how the elements of effective safety, industrial hygiene and environmental programs are interrelated and dependent on one another.

Course Specification Sheet **OSHE 112 Design of Hazard Controls**

Course Description:

Prerequisite: Current enrollment or prior credit for OSHE 111. This course studies the application of scientific and engineering principles and methods to achieve optimum safety and health conditions through the analysis and design of process, equipment, products, facilities, operations, and environment. A variety of topics will be covered, including product design, plant layout, construction, maintenance, pressure vessels and piping, mechanical systems, materials handling and storage, ventilation, power tools, electrical equipment, confined space, and transportation vehicles and systems.

Minimum Topics:

1. Hazard Control in General
2. Buildings and Plant Layout
3. Construction of Plant Facilities
4. Maintenance of Plant Facilities
5. Boilers and Unfired Pressure Vessels
6. Machine Safeguarding & Lockout/Tagout
7. Personal Protective Equipment
8. Electrical Safety
9. Fire Hazards and Life Safety
10. Materials Handling and Storage
11. Crane, Conveyor, and Rigging
12. Powered Industrial Truck
13. Hand and Portable Power Tool

Course Objectives:

1. Identify a variety of occupational hazards.
2. Recognize information resources regarding occupational hazards.
3. Explain basic principles and technologies to analyze and control occupational hazards.

Course Specification Sheet

OSHE 121 Safety and Health Program Management and Administration

Course Description:

Prerequisite: Current enrollment or prior credit for OSHE 111. This course addresses the application of management principles and techniques to the management of safety and health and loss control programs. Topics include planning, organizing, budgeting, resourcing, operating, implementing and evaluating safety functions.

Minimum Topics:

1. Introduction to Corporate Organization
2. Evolution of Modern Safety Concepts
3. OSHA Responsibilities and Implementation
4. Organization and Administration Effects
5. Safety Management
6. Cost Analysis
7. Performance Measurement and Motivation
8. Systems Safety Analysis
9. Employee Selection, Placement and Training
10. Psychological Aspects and Ergonomics
11. Product Safety

Course Objectives:

1. Describe the history of modern industrial safety management and explain how the principles of modern safety management developed.
2. Discuss the safety roles and responsibilities of managers at the various levels of authority within a typical industrial organization.
3. Describe the proactive elements of management systems that can be used to develop and implement effective safety programs.
4. Describe the reactive elements of safety programs that are used in effective programs.
5. Identify and explain the psychological and ergonomic components of a job as they relate to safety and health.

Course Specification Sheet **OSHE 141 [241] Principles of Industrial Hygiene**

Course Description:

This course introduces the basic industrial hygiene principles of anticipation, recognition, evaluation and control of workplace conditions as they relate to occupational health. Class discussion will focus on a variety of occupational hazards including air contaminants, chemical hazards, biological hazards and physical hazards.

Minimum Topics:

1. Fundamental Concepts of Toxicology
 - a. Definitions
 - b. Federal Regulations
 - c. Environmental Factors or Stresses
 - d. Industrial Toxicology
 - e. Modes of Entry of Harmful Agents
 - f. Types of Airborne Contaminants
 - g. Threshold Limit Values (TLVs), etc.
 - h. Evaluation
 - i. Occupational Skin Diseases
 - j. Control Measures
2. Anatomy, Physiology, Pathology
 - a. Lungs
 - b. Skin
 - c. Ear
 - d. Eyes
3. Recognition of Specific Environmental Factors or Stresses
 - a. Gases, Vapors and Solvents
 - b. Particulates
 - c. Industrial Dermatoses
 - d. Industrial Noise
 - e. Ionizing Radiation
 - f. Temperature Extremes
 - g. Ergonomics
 - h. Biological Hazards
4. Evaluation of Hazards
 - a. Evaluation
 - b. Methods of Evaluation
 - c. Air Sampling Instruments
 - d. Direct Reading Gas and Vapor Monitors
 - e. Medical Monitoring
5. Control of Environmental Hazards
 - a. Methods of Control
 - b. Ventilation: Local Exhaust and General
 - c. Personal Protective Equipment (PPE)
 - d. Control of Environmental Hazards

Course Objectives:

1. Describe the basic principles of industrial hygiene, i.e., the anticipation, recognition, evaluation and control of hazards in the workplace.
2. Describe the provisions of federal, state and industry regulations and guidelines regarding worker health on the job.
3. Apply the fundamental concepts of industrial hygiene in the work environment.
4. Describe specific environmental factors or stresses in the workplace and their potential health effects.
5. Demonstrate proper methods in the use and care of industrial hygiene instrumentation and personal protective equipment.

Course Specification Sheet

OSHE 231 Safety Laws, Regulations, and Standards

Course Description:

Prerequisite: Current enrollment or prior credit for OSHE 111. This course studies the development processes, sources, and applications for minimum safety requirements established by laws, regulations, standards, and codes. Major topics include OSHA General Industry and Construction Standards, the enforcement of safety standards, and the role of NIOSH and ACGIH in the safety movement.

Minimum Topics:

1. Laws, Regulations, Codes and Standards - What Are They?
2. The History of Federal Efforts to Regulate Industrial Safety
3. The Occupational Safety and Health Act of 1970
4. Other Federal Safety Regulations and Their Applications
5. Organization of the *Code of Federal Regulations* (CFR)
6. Making the CFR Easier to Use
7. Industry Standards-Making Organizations
8. Standards and Codes
9. Consensus Standards
10. OSHA Regulation Parts and Subparts
11. OSHA Compliance Standards and Performance Standards
12. OSHA Regulations as Minimum Safety Standards
13. Applications of OSHA Regulations

Course Objectives:

1. Describe the history and development of the Occupational Safety and Health Act of 1970, and list its major provisions, and list other major pieces of federal legislation that affect industrial safety.
2. Describe how mandatory material found in the Code of Federal Regulations (CFR) is organized and demonstrate the ability to locate specific regulations with ease.
3. Demonstrate knowledge of standards and codes developed by industry and private organizations which parallel, supplement and compliment federal regulations. Explain how these materials are used as “consensus standards”.
4. Demonstrate knowledge of the content of the safety regulations found in 29 CFR 1910 and 29 CFR 1926.
5. Select several descriptions of work situations from a list provided by the instructor, state the specific applicable federal regulations for each instance.

Course Specification Sheet OSHE 242 Ergonomics

Course Description:

Prerequisites: Enrollment in or prior credit for Mathematics 241 and OSHE 111. This course explores ergonomic design principles which involve the planning and adapting of equipment and tasks to promote workers' efficiency and comfort. Major topics include: human anatomy, physiology, anthropometry, and other characteristics; and the application of ergonomic principles to workstations, tool design, and material handling procedures.

Minimum Topics:

1. Introduction to Ergonomics
2. Human Anatomy, Posture, and Biomechanics
3. Anthropometry and Workstation Design
4. Standing VS. Sitting
5. How the Mind Works
6. Human Senses
7. Interaction with the Environment
8. Manual Material Handling
9. The Upper Body at Work
10. Hand-Tool Design
11. Physiology, Workload, and Work Capacity
12. Ergonomic Job Analysis
13. Psychosocial Stress and Work Organization

Course Objectives:

1. Select different conceptual frameworks and models to summarize the diversity of ergonomics subjects.
2. Relate the human musculoskeletal system with the work that human performs.
3. Describe the importance of anthropometric information and apply it to the design of workstation, equipment, and tool.
4. Compare and assess the differences between standing and sitting postures and their importance in proper workstation design.
5. Predict how body tissues respond to excessive loading and apply the basic principles for the design of hand tools and equipment.
6. Explain the biomechanics of shoulder and back injuries.
7. Summarize ergonomic risk factors for musculoskeletal disorders and recommend interventions to the redesign of work.

Course Specification Sheet OSHE 251 Environmental Laws and Practices

Course Description:

This course presents an introduction to federal and state environmental regulations which impact the safety function in industry. Major topics include hazardous waste management, disposal and cleanup, prevention of air, water, and soil contamination, and environmental program management.

Minimum Topics:

1. The Difference between Laws and Regulations
2. Important Federal Publications
3. The *Code of Federal Regulations* (CFR)
4. History of Environmental Legislation
5. Chemical Use and Assessment Laws
 - a. Toxic Substances Control Act (TSCA)
 - b. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
 - c. Occupational Safety and Health Act (OSH Act)
6. Chemical By-Product Laws
 - a. Clean Air Act (CAA)
 - b. Clean Water Act (CWA)
 - c. Safe Drinking Water Act (SDWA)
7. Chemical Waste Disposal Laws
 - a. Resource Conservation and Recovery Act (RCRA)
 - b. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
 - c. Superfund Amendment and Reauthorization Act (SARA)
8. Chemical Transportation Laws.
 - a. Hazardous Materials Transportation Act (HMTA)
 - b. Hazardous Materials Transportation Uniform Safety Act (HMTUSA)

Course Objectives:

1. Briefly describe the process by which a law passed by congress becomes a safety, health or environmental regulation.
2. Discuss the general history of safety and environmental legislation in the United States and the major factors and historic events which have influenced its development.
3. Be able to demonstrate a basic understanding of the purpose of a specific safety or environmental regulation by assigning it to one of the four major categories of environmental laws, i.e.: (1) Chemical Use and Assessment Laws; (2) Chemical By-Product Laws; (3) Chemical Waste Disposal Laws; and (4) Chemical Transportation Laws.
4. Identify and discuss the basic provisions of major environmental laws, and tell where, within the *Code of Federal Regulations* (CFR), the regulations resulting from the laws are found.
5. Define important terms and acronyms of safety and environmental regulations.

Course Specification Sheet **OSHE 261 Fire Protection and Prevention**

Course Description:

This course introduces the basic principles of fire and fire prevention in the work place. Emphasis will be placed on evaluating existing and planned facilities from a fire and explosion standpoint, and applying the basic principles of hazard recognition, evaluation and control when developing fire prevention and emergency response activities.

Minimum Topics:

1. Fire in History and Contemporary Life
2. Understanding America's Fire Problem
3. Fire Behavior
4. Building Design and Construction
5. Concepts of Egress Design
6. Assessing Life Safety in Buildings
7. Fire Department Structure and Management
8. Fire Department Facilities and Equipment
9. Preventing Fire Loss
10. Controlling Fire Loss through Active Fire Protection Systems
11. Fire Investigation
12. Introduction to the NFPA 101 – Life Safety Code
13. Planning for Emergency Response
14. OSHA Requirements Relative to Fire Prevention and Emergency Action/Response Plans
15. Public and Private Support Organizations
16. Careers in Fire Protection

Course Objectives:

Upon completion of the course, students will be able to:

1. Define the term "fire"
2. Explain the Fire Triangle and Fire Tetrahedron
3. Explain various methods of fire and explosion control
4. List and explain the classes of fire
5. Describe characteristics of combustible solids such as wood, plastics, polymers and textiles
6. Define key terms relative to flammable and combustible liquids, gases and vapors as well as hazardous materials
7. Explain the NFPA/NEC Electrical Hazard Classification System
8. Describe the general procedure for conducting a fire investigation
9. Explain the elements of building fire safety
10. Compare and contrast the properties of wood, steel, concrete, glass, gypsum, masonry and plastics with respect to fire
11. Explain the concept of Flame Spread Ratings
12. Explain the concept of Fire Loading Based on Occupancy
13. Describe basic methods of smoke management
14. Explain NFPA 220 relative to the Types of Building Construction
15. Describe the economic benefits of sprinkler/deluge systems

16. Compare and contrast the dry pipe, wet pipe and deluge type systems
17. Explain the properties, characteristics and limitations of the following extinguishing agents:
 - CO₂
 - Halon
 - Dry Chemical
 - Dry Powder
 - Nitrogen
 - Steam
18. Explain OSHA and NFPA requirements for the inspection and maintenance of fire extinguishing systems and portable fire extinguishers
19. Describe the services that can be performed by heat and smoke detection devices
20. Explain the purpose of the NFPA Life Safety Code
21. Explain the difference between a “specification” code and a “performance” code
22. Describe the relationships between Building Codes and Fire Codes
23. Describe OSHA requirements for:
 - Controlling Hot Work
 - Fire Watches
 - Emergency Action Plans
 - Fire Prevention Plans
 - Fire Brigades
24. Describe how to prepare a Welding, Burning/Hot Work Permit

Course Specification Sheet

OSHE 311 Safety and Health Program Development

Course Description:

This course presents the key elements necessary to develop or to assess occupational safety and health programs. Major topics include management commitment and employee involvement; worksite analysis; hazard correction and control; training, and evaluation.

Minimum Topics:

1. Assessment of Management Commitment
2. Obtaining Change Where Necessary
3. Supporting Management Efforts
4. Opportunities for Employee Involvement
5. Obtaining "Buy-in"
6. Effectiveness of Incentive Programs
7. Worksite Analysis Techniques
8. Conducting Worksite Analysis
9. Working with the Results
10. Methods of Hazard Control
11. Implementing Changes
12. Effective Training
13. Types of Training
14. Method of Evaluation
15. Using Feedback

Course Objectives:

1. Describe the elements of an effective occupational safety and health program, such as management commitment and employee involvement.
2. Develop a new occupational safety and health program for a company that has not previously had one.
3. Assess an existing occupational safety and health program.
4. Apply proven management principles to correct deficiencies discovered through the assessment of an occupational safety and health program.

Course Specification Sheet OSHE 322 Behavior Aspects of Safety

Course Description:

Prerequisites: Psychology 101. This course will introduce students to the application of scientific research based principles and methods to bring about change in the work culture through attitude, behavior and environmental conditions. Specific topics will include traditional approaches and philosophies for improving safety, environmental effects, incentives, developing and building cultural change, identifying critical behavior, developing checklists, giving and receiving recognition, and measuring performance.

Minimum Topics:

1. Elements of the Workplace System
2. Problems Using Psychological Approaches to Preventing Accidents
3. Core Concepts for the Course
4. Establishing Theories For Behavior-based Safety: The Total Safety Culture
5. Person-Based vs. Behavior-Based
6. The Required Paradigm Shift
7. The Nature of the Worker
8. Principles of Behavior
9. Critical Behaviors
10. Analysis of Behaviors
11. The Role of Activators
12. The Role of Consequences
13. Intervention for Change
14. Actively Caring
15. Promoting Teamwork
16. Obtaining Buy-in and Support

Course Objectives:

1. List the components of a workplace; i.e., its human, situational and environmental components, and describe their interrelationships.
2. Explain how many current safety practices in the workplace are not effective reducing the number workplace incidents below present levels.
3. Describe the characteristics of a Total Safety Culture and identify the elements that must be present in order to create such a culture.
4. Apply the characteristics of human nature to produce meaningful, permanent changes in behavior that will promote safety.
5. Express the principles upon which behavior is based.
6. Define, identify, observe, and analyze critical behaviors.

Draft by Dr. Lu Yuan
05/18/2009

7. Examine how activators and consequences can be used to modify and mold behavior.
8. Recommend interventions in established behavior patterns to develop acceptable safety practices.
9. Justify and obtain support and buy-in for a Total Safety Culture through behavior based safety efforts.

Course Specification Sheet OSHE 323 Product Safety and Liability

Course Description:

This course examines the importance of considering the safety of a product in its ultimate use. It considers aspects of product design; intended use and foreseeable misuse; and potential injury mechanisms. It uses classic products liability case studies to provide practical application of the principles learned. It also looks at manufacturer liabilities through injury tort actions.

Minimum Topics:

1. Introduction and General Information
2. Product Liability Issues
3. Safety Costs and Losses
4. Standards and Criteria
5. Modern Concepts of Accident Prevention
6. Hazardous Characteristics of Products
 - a. Hazards which Cause Injury
 - b. Hazards which Cause Sickness
 - c. Malfunctions
 - d. Environmental Factors
 - e. Operator Error
7. Minimizing Accidents and Their Effects
8. Diagnostic Tools and Methodologies
 - a. Fault Tree Analysis
 - b. Failure Mode and Effect Analysis
 - c. Operating Hazard Analysis
9. Product Safety Program
10. Risk Assessment
11. Manufacturing the Safe Product

Course Objectives:

1. Describe the basis for product liability lawsuits that can increase the costs and affect the profits of a company.
2. Discuss the state and federal agencies, and the statute laws that regulate product safety.
3. Discuss the production standards and other criteria that are applied to the manufacture of products for the market.
4. List and describe the possible conditions that can cause injury as result of the use of a product: i.e., malfunction, operator error, etc.
5. Demonstrate a knowledge of the analysis methods and techniques that can be employed to identify and correct potential hazards in manufactured products to prevent user injury.

Course Specification Sheet

OSHE 341 Field Methods of Industrial Hygiene and Toxicology

Course Description:

Prerequisites: Math 241 and OSHE 241. This course presents an examination of the methods used by the industrial hygienist for the identification and assessment of health hazards in the workplace. Major topics include: establishment and use of methodologies to sample and evaluate exposures to air contaminants (gasses, vapors, aerosols, and particulates), microorganisms and allergens, noise, heat, and cold stress, electrical and magnetic radiation, and ionizing and ultraviolet radiation. The course also includes equipment use, maintenance, and calibration.

Minimum Topics:

1. Basic Principles of Sampling
2. Occupational Exposure Limits (OELs)
3. Equipment
 - a. The Right Equipment of the Job
 - b. Calibration and Maintenance of Equipment
4. Methods
 - a. Use of Sampling Protocols
 - b. Error and Accuracy
 - c. Chain of Custody
5. Resources
 - a. NIOSH
 - b. OSHA
 - c. AIHA & ACGIH
 - d. Others
6. Sampling for Gases and Vapors
7. Sampling for Particulates
8. Sampling for Physical Hazards
 - a. Noise
 - b. Radiation
 - c. Barometric Hazards
 - d. Thermal Hazards

Course Objectives:

1. Design and implement an air sampling program for gases, vapors, aerosols and particulates.
2. Design and implement a sampling program for other health hazards such as microorganisms, heat and cold, and various radiation sources.
3. Describe the common analytical methods used by laboratories.
4. Select, calibrate and use the proper instruments for collecting samples.
5. Use statistical data to assist in making decisions to establish control methods.

Course Specification Sheet

OSHE 381 [281] Safety in Chemical and Process Industries

Course Description:

Prerequisites: Enrollment in or prior credit for Chemistry 101 and Physics 191. This course presents the fundamentals of chemical and process industry safety. It includes a discussion of federal regulatory requirements; the major hazards inherent in chemical plants and petroleum refineries; and the methods used to identify, assess and mitigate those hazards. Chemical process safety is discussed in the context of case studies, providing students with the opportunity to examine real-life industry safety practices.

Minimum Topics:

1. Introduction to Chemical Process Safety
2. Federal Process Safety Management Regulations
3. Toxicology
4. Industrial Hygiene Principles
5. Source Models
6. Toxic Release and Dispersion Models
7. Characteristics of Flammable and Explosive Materials
8. Designs to Prevent Fires and Explosions
9. Causes of Over-pressurization
10. Introduction to Reliefs
11. Relief Sizing
12. Hazard Identification Methodologies
13. Risk Assessment Methodologies
14. Accident Investigations

Course Objectives:

1. Discuss the provisions of the federal Process Safety Management (PSM) regulations and demonstrate how they are applied at typical industries in the area.
2. Identify the toxic effects of chemicals encountered in the industrial environment; and examine how engineering controls are used to eliminate these hazards.
3. Discuss the physical characteristics of materials which make them flammable or explosive; and illustrate the controls that are used in the industrial setting to counter these hazards.
4. State the causes of over-pressurization in equipment and systems in the industrial environment; and illustrate the operation and use of devices to prevent its occurrence.
5. Describe how each of the formal Process Hazard Analysis (PHA) techniques discussed in class is used. Examine and explain the advantages and disadvantages of each technique.

Course Specification Sheet **OSHE 382 [282] Construction Safety**

Course Description:

Prerequisites: Enrollment in or prior credit for OSHE 111 and OSHE 121. The course addresses the application of management principles, communication and human relations factors, safety/health rules, industry and federal standards, accident investigation, and technical issues especially within the job planning phases in the construction environment.

Minimum Topics:

1. Construction Safety in General
2. Construction Safety Program
3. Workers' Compensation in Construction
4. Contractor Selection and Safety Requirement
5. Construction Safety Abuse Programs
6. Rewards/Incentives
7. Prejob/Pretask Planning
8. Accident Investigation and Reconstruction
9. Safety Training
10. Regulatory Requirements
11. Phase Planning for Site Preparation
12. Excavation, Concrete, and Steel Erection
13. Fall Prevention and Protection
14. Hazardous Materials & Confined Spaces
15. Mechanical and Electrical Systems

Course Objectives:

1. Understand construction safety in an increasingly challenging and changing environment.
2. Describe the roles of organizations and personnel involved in major construction projects and explain how each affects site safety.
3. Illustrate how contractors and subcontractors can be qualified and selected for a construction project.
4. Demonstrate how site safety programs can be coordinated among the many contractors on a construction site to provide the overall safety.
5. Explain the legal aspects including liability and regulatory requirements of construction safety.
6. Examine many technical issues in construction, particularly the requirements and applications of safety planning in the early job phases.

Course Specification Sheet
OSHE 421 [321] Measurement of Safety Performance and
Accident Investigation and Analysis

Course Description:

Prerequisite: Enrollment in or prior credit for Math 241. This course presents methods to objectively evaluate a company's safety progress. The course covers two distinct topics: (1) safety performance measurement, and (2) incident investigation and analysis. The first segment of the course addresses ways of measuring safety performance objectively and subjectively using safety audits, inspections, observations, performance appraisal systems, and injury/illness statistics. The second segment of the course addresses the causes of accidents, systematic ways of conducting investigations, documenting the findings, causes and other significant data, and drafting recommendations.

Minimum Topics:

1. Introduction & Importance of Measurement
2. Traditional Safety Performance Indicators
3. Current Measurement Techniques
4. Injury and Illness Statistics
5. Performance Measurement Category 1
6. Performance Measurement Category 2
7. Systematic Approach of Measurement
8. Measurement Summary and Trends
9. Accident Investigation Basics
10. Preparing for Mishaps
11. Getting Underway with the Investigation
12. Human Aspects & Environment
13. Materials & Systems Investigation
14. Investigation Techniques 1
15. Investigation Techniques 2
16. Investigation Report and Overview

Course Objectives:

1. Understand the importance of performance measurement in the safety field.
2. Differentiate between current and previous safety performance measurement strategies.
3. Describe different measurement methodologies to evaluate and improve safety performance in different environments.
4. Understand the causes of accidents and incidents and discuss the need for investigation.
5. Develop systematic approaches to prepare, conduct, organize, and manage accident investigation.
6. Describe and apply various analytical techniques of accident investigation.

Course Specification Sheet **OSHE 424 [324] System Safety Methodologies**

Course Description:

Prerequisites: Mathematics 241, OSHE 111, and OSHE 121. This course presents the concepts of Risk Management and Loss Control through the use of systematic approaches to hazard anticipation, identification, evaluation and control. Major topics include: an introduction to qualitative methods of evaluating the hazards and risks associated with systems, processes, equipment, and other entities. It also includes a review of techniques for mitigating or managing identified risks.

Minimum Topics:

1. System Safety Methodologies in General
2. Understanding Risk
3. Hazard Evaluation Scope and Preparation
4. Hazard Evaluation Meetings and Results
5. Hazard Identification Methods in General
6. Hazard and Operability Study (HazOp)
7. HazOp Case Study Step 1
8. HazOp Case Study Step 2
9. HazOp Case Study Step 3
10. Fault Tree Analysis (FTA)
11. FTA Case Study Step 1
12. FTA Case Study Step 2
13. System Safety Analysis Overview

Course Objectives:

1. Describe and compare the basic features of the following hazard evaluation techniques:
 - Safety Review
 - Checklist Analysis
 - Relative Ranking
 - Preliminary Hazard Analysis
 - What-if Analysis
 - What-if/Checklist Analysis
 - Hazard and Operability Analysis (HazOp)
 - Failure Modes and Effect Analysis
 - Fault Tree Analysis (FTA)
 - Event Tree Analysis (ETA)
 - Cause-Consequence Analysis
 - Human Reliability Analysis
2. Select the best hazard evaluation technique based on the conditions of the job and the desired output of the analysis.
3. Perform a simple hazard evaluation using one or more of the methods studied in the class.

Course Specification Sheet OSHE 441 Industrial Toxicology

Course Description:

Prerequisites: General Biology 151, Zoology 241, and OSHE 241. This course examines the effects of industrial toxicants on the human body. Major topics include: the discipline of toxicology, acute and chronic exposures and effects, routes and characteristics of exposures, target organs and systems, dose and response, and carcinogenesis. It also discusses the toxic characteristics of various classes of toxic materials.

Minimum Topics:

1. General Principles of Toxicology
2. Absorption, Distribution, and Elimination of Toxic Agents
3. Biotransformation: A Balance between Bioactivation and Detoxification
4. Hematotoxicity: Chemically Induced Toxicity of the Blood
5. Hepatotoxicity: Toxic Effects on the Liver
6. Nephrotoxicity: Toxic Responses of the Kidney
7. Neurotoxicity: Toxic Responses of the Nervous System
8. Dermal and Ocular Toxicity: Toxic Effects of the Skin and Eyes
9. Pulmonotoxicity: Toxic Effects in the Lung
10. Immunotoxicity: Toxic Effects on the Immune System
11. Reproductive Toxicity
12. Mutagenesis and Genetic Toxicology
13. Chemical Carcinogenesis
14. Properties and Effects of Metals
15. Properties and Effects of Pesticides
16. Properties and Effects of Organic Solvents
17. Properties and Effects of Natural Toxins and Venoms

Course Objectives:

1. Describe and define the general principles of toxicology, including terminology; the dose response relationship; routes of entry; absorption, distribution, and elimination of toxic agents; and biotransformation of substances in the body.
2. Describe the adverse effects caused by various toxic agents on specific tissues and organs including the liver, blood, kidneys, nervous system, skin, eyes, lungs, and immune system.
3. Discuss toxicological areas of special concern including reproductive toxicology and carcinogenesis.
4. Discuss adverse health effects associated with selected classes of chemical agents including metals, pesticides, organic solvents, and naturally occurring toxins.
5. Describe the role and application of toxicology in modern times, including risk assessment, public health, epidemiology, and control strategies.

Course Specification Sheet **OSHE 451 Hazardous Materials Management**

Course Description:

Prerequisite: OSHE 251. This course examines acceptable policies, procedures, and methods for the handling of oil and hazardous wastes produced by industry. Major topics include: advanced aspects of risk assessment, applicable environmental legislation, waste characterization and site assessment, waste minimization and recovery, chemical, physical, and biological waste treatment, thermal waste treatment, landfill disposal and injection well disposal. It also includes a section on the transportation of hazardous wastes.

Minimum Topics:

1. Introduction & Overview
2. Administration and Regulatory Requirements
 - a. RCRA
 - b. HAZWOPER
 - c. HazCom
 - d. Others (DOE, DOT, etc.)
3. Hazardous Materials and Hazardous Wastes
 - a. Defining HazMat and Hazardous Waste
 - b. HazMat/Hazardous Waste Exposures
 - c. Personal Protective Equipment - Selection and Use
 - d. Monitoring Methodologies
4. Waste Minimization
5. On-Site Waste Management
6. Waste Treatment and Disposal Technologies
7. Waste Transportation
8. Emergency Response Organization and Planning
9. Emergency Response Methods
10. Emergency Response Equipment

Course Objectives:

1. Describe state and federal requirements for management of waste and hazardous waste materials, as found in 40 CFR 240 to 271.
2. Analyze an industrial facility's produced waste and develop a program to effectively and efficiently manage that waste.
3. Describe the operation of a treatment, storage, and disposal (TSD) facility, and how to select a TSD facility to meet a company's waste disposal requirements.
4. Describe the various methods of treating or disposing of hazardous waste, i.e., incineration, injection, impoundments, etc., and give the advantages and disadvantages of each type.
5. Respond to a simulated emergency involving hazardous materials, demonstrating proper, safe methods for hazard identification, evaluation, and control.

Course Specification Sheet
OSHE 471 [371] Education and Training Methods for
Occupational Safety and Health

Course Description:

This course introduces the concepts of adult training and education with emphasis on occupational safety and health. Major topics include: instructional system design, including performing a training needs assessment tasks analysis, program design goals and objectives, performance evaluation, delivery methods and media; computer-based training methods; systems to manage costs; and record keeping.

Minimum Topics:

1. Management Involvement in Safety Training
2. The Role of the Supervisor in Safety Training
3. Facts about Safety Training
4. OSHA Requirements for Safety Training
5. Other Requirements
6. Determining Training Needs
7. Establishing Training Objectives
8. Determining Course Content
9. Developing Instructional Outlines
10. Use of Audio/Visual Aids and Equipment
11. Examination, Testing and Validation
12. Training Recordkeeping
13. Drills and Exercises
14. On-The-Job Training

Course Objectives:

1. Define and describe the differences between education and training.
2. Given a suitable training topic, develop a “map” for the steps in developing a training course.
3. Given a suitable training topic, perform a skills analysis.
4. Given an accurate skills analysis for a training topic, write a set of training objectives for that topic.
5. Given proper training objectives, develop a course of instruction designed to achieve the training objectives.
6. Develop a method of criterion testing that will demonstrate achievement of the objectives of the training.

Appendix D
Rubric for Assessing OSH&E Program Outcomes
Draft by Dr. Lu Yuan 05/18/2009

Objective 1: Apply knowledge and principles of mathematics, science, technology, and management in industry, business, or other related areas of employment as occupational safety, health, and environment professionals.

Expected Outcomes: Students completing the Baccalaureate degree in OSH&E will demonstrate the ability to apply basic mathematical and scientific knowledge in the safety, health, and environment field.

Performance Criteria	Below Expectations 1	Progressing to Criteria 2	Meets Criteria 3	Exceeds Criteria 4	Score
1. Students know how to apply basic mathematical and statistical knowledge in the safety, health, and environment field.	Student fails to solve typical OSH&E problems using basic mathematical and statistical knowledge.	Student identifies typical OSH&E problems, but struggles to select proper mathematical and statistical tools needed to solve the problems.	Student correctly identifies typical OSH&E problems and applies basic mathematical and statistical knowledge, but makes minor mistakes during problem solving.	Student clearly identifies typical OSH&E problems and correctly applies basic mathematical and statistical knowledge to solve the problems.	
2. Students know basic principles in chemistry, physics, and biology as it pertains to the practice of safety, health, and environment.	Student is unable to understand basic principles in chemistry, physics, and biology that are applied to the OSH&E field.	Student understands basic principles in chemistry, physics, and biology that are applied to the OSH&E field, but struggles to apply those principles properly to solve specific problems.	Student understands and applies basic principles in chemistry, physics, and biology that are applied to the OSH&E field, but makes minor mistakes and/or demonstrates a lack of clarity during problem solving.	Student clearly and correctly understands and applies basic principles in chemistry, physics, and biology that are applied to the OSH&E field to solve specific problems.	

<p>3. Students know basic principles in business management as it pertains to the practice of safety, health, and environment.</p>	<p>Student is unable to understand basic principles in business management that are applied to the OSH&E field.</p>	<p>Student understands basic principles in business management that are applied to the OSH&E field, but struggles to apply those principles properly to solve specific problems.</p>	<p>Student understands and applies basic principles in business management that are applied to the OSH&E field, but demonstrates a lack of clarity during problem solving.</p>	<p>Student clearly and correctly understands and applies basic principles in business management that are applied to the OSH&E field to solve specific problems.</p>	
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Objective 2: Apply practical-oriented knowledge and skills in safety, health, and environment to anticipate, identify and evaluate hazardous conditions and practices, to develop hazard control designs, methods, procedures and programs, and to implement and manage effective safety and health programs.

Expected Outcomes 2A: Students completing the Baccalaureate degree in OSH&E will demonstrate the understanding of safety, health, and environment knowledge.

Performance Criteria	Below Expectations 1	Progressing to Criteria 2	Meets Criteria 3	Exceeds Criteria 4	Score
2A1. Students understand occupational safety, health, and environment fundamentals.	Student fails to understand occupational safety, health, and environment fundamentals.	Student understands the basics of occupational safety, health, and environment, but struggles to differentiate between concepts.	Student understands the basics of occupational safety, health, and environment and how they are interrelated, but demonstrates a lack of clarity.	Student clearly and correctly understands occupational safety, health, and environment fundamentals.	
2A2. Students know legal aspects of safety, health, and environmental practices.	Student fails to understand the legal framework within the OSH&E field.	Student understands the legal framework within the OSH&E field, but struggles to differentiate between agency/organization responsibilities.	Student understands the legal framework within the OSH&E field and how different agencies/organizations are interrelated, but demonstrates a lack of clarity.	Student clearly and correctly understands the legal framework within the OSH&E field.	
2A3. Students understand the interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors on the human body.	Student fails to understand physical, chemical, biological, and ergonomic agents, factors, and/or stressors.	Student understands the impacts of physical, chemical, biological, and ergonomic agents, factors, and/or stressors on the human body, but struggles to differentiate between substances.	Student understands the interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors on the human body, but demonstrates a lack of clarity.	Student clearly and correctly understands the impacts and interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors on the human body.	

<p>2A4. Students understand the application of laws, regulations, standards, and codes to safety, health and environmental conditions.</p>	<p>Student fails to understand the application of laws, regulations, standards, and codes to safety, health and environmental conditions.</p>	<p>Student understands how to apply laws, regulations, standards, and codes to safety, health and environmental conditions, but struggles to differentiate between substances.</p>	<p>Student understands the application of laws, regulations, standards, and codes to safety, health and environmental conditions, but demonstrates a lack of clarity.</p>	<p>Student clearly understands and correctly applies laws, regulations, standards, and codes to safety, health and environmental conditions.</p>	
<p>2A5. Students understand and use basic principles of fire prevention and protection in the workplace.</p>	<p>Student fails to understand basic principles of fire prevention and protection in the workplace.</p>	<p>Student understands basic principles of fire prevention and protection in the workplace, but struggles to use the principles properly.</p>	<p>Student understands and uses basic principles of fire prevention and protection in the workplace, but demonstrates a lack of clarity.</p>	<p>Student clearly understands and correctly uses basic principles of fire prevention and protection in the workplace.</p>	
<p>2A6. Students know industrial and construction safety throughout the work processes.</p>	<p>Student fails to understand industrial and construction safety throughout the work processes.</p>	<p>Student understands industrial and construction safety throughout the work processes, but struggles to differentiate between concepts and substances.</p>	<p>Student understands industrial and construction safety throughout the work processes, but demonstrates a lack of clarity.</p>	<p>Student clearly and correctly understands industrial and construction safety throughout the work processes.</p>	

Expected Outcomes 2B: Students completing the Baccalaureate degree in OSH&E will demonstrate the ability to **obtain the necessary skills to** anticipate, identify and evaluate safety, health, and environment hazards, and to develop and implement hazard control methods, programs, and system designs.

Performance Criteria	Below Expectations 1	Progressing to Criteria 2	Meets Criteria 3	Exceeds Criteria 4	Score
2B1. Students know how to apply basic laboratory techniques associated with industrial hygiene and basic sciences.	Student fails to understand basic laboratory techniques associated with industrial hygiene and basic sciences.	Student understands the application of basic laboratory techniques associated with industrial hygiene and basic sciences, but struggles to differentiate between concepts and methods.	Student understands the application of basic laboratory techniques associated with industrial hygiene and basic sciences, but demonstrates a lack of clarity.	Student clearly understands and correctly applies basic laboratory techniques associated with industrial hygiene and basic sciences.	
2B2. Students know how to anticipate, identify and evaluate hazardous agents, conditions, and practices.	Student fails to understand how to anticipate, identify and evaluate hazardous agents, conditions, and practices.	Student understands how to anticipate, identify and evaluate hazardous agents, conditions, and practices, but struggles to differentiate between methods.	Student understands different methods to anticipate, identify and evaluate hazardous agents, conditions, and practices, but demonstrates a lack of clarity.	Student clearly understands and correctly applies different methods to anticipate, identify and evaluate hazardous agents, conditions.	
2B3. Students know fundamental exposure assessment techniques.	Student fails to understand fundamental exposure assessment techniques.	Student understands the basics of exposure assessment techniques, but struggles to differentiate between methods.	Student understands different fundamental exposure assessment techniques, but demonstrates a lack of clarity.	Student clearly understands fundamental exposure assessment techniques.	

<p>2B4. Students know how to develop hazard control designs, methods, procedures, and programs.</p>	<p>Student fails to understand how to develop hazard control designs, methods, procedures, and programs.</p>	<p>Student understands how to develop hazard control designs, methods, procedures, and programs, but struggles to differentiate between concepts and methods.</p>	<p>Student understands different means to develop hazard control designs, methods, procedures, and programs, but demonstrates a lack of clarity.</p>	<p>Student clearly understands and correctly develops hazard control designs, methods, procedures, and programs.</p>	
<p>2B5. Students know how to conduct accident/incident investigation and analysis.</p>	<p>Student fails to understand how to conduct accident/incident investigation and analysis.</p>	<p>Student understands how to conduct accident/incident investigation and analysis, but struggles to differentiate between theories, models and methods.</p>	<p>Student understands different theories, models and methods to conduct accident/incident investigation and analysis, but demonstrates a lack of clarity.</p>	<p>Student clearly understands and correctly conducts accident/incident investigation and analysis.</p>	
<p>2B6. Students know how to implement and manage effective safety, health, and environment programs.</p>	<p>Student fails to understand how to implement and manage effective safety, health, and environment programs.</p>	<p>Student understands how to implement and manage effective safety, health, and environment programs, but struggles to differentiate between elements.</p>	<p>Student understands different elements to implement and manage effective safety, health, and environment programs, but demonstrates a lack of clarity.</p>	<p>Student clearly understands and correctly implements and manages effective safety, health, and environment programs.</p>	

Objective 3: Become effective communicators and ethical facilitators within the practice of safety, health, and environment.

Expected Outcomes: Students completing the Baccalaureate degree in OSH&E will demonstrate the ability to express thoughts effectively in oral and written communications, and to understand ethical behaviors and professional responsibility.

Performance Criteria	Below Expectations 1	Progressing to Criteria 2	Meets Criteria 3	Exceeds Criteria 4	Score
1. Students are able to effectively express thoughts in oral and written communications.	Student fails to effectively express thoughts in oral and written communications.	Student expresses thoughts in oral and written communications, but struggles to demonstrate the effectiveness.	Student generally effectively expresses thoughts in oral and written communications, but demonstrates a lack of consistency.	Student consistently and effectively expresses thoughts in oral and written communications.	
2. Students know the techniques, skills, and modern behavioral tools necessary for the practice of safety, health, and environment.	Student fails to understand the techniques, skills, and modern behavioral tools necessary for the practice of safety, health, and environment.	Student understands the techniques, skills, and modern behavioral tools necessary for the practice of safety, health, and environment, but struggles to differentiate between concepts and methods.	Student understands different techniques, skills, and modern behavioral tools necessary for the practice of safety, health, and environment, but demonstrates a lack of clarity.	Student clearly understands the techniques, skills, and modern behavioral tools necessary for the practice of safety, health, and environment.	
3. Students are able to effectively function as a part of multi-disciplinary team.	Student fails to effectively function as a part of multi-disciplinary team.	Student functions as a part of multi-disciplinary team, but struggles to demonstrate the effectiveness.	Student generally effectively functions as a part of multi-disciplinary team, but demonstrates a lack of consistency.	Student consistently and effectively functions as a part of multi-disciplinary team.	

Objective 4: Continue professional development to address the need of applying principles of safety, health, and environment within a constantly changing and increasingly diverse environment.

Expected Outcomes: Students completing the Baccalaureate degree in OSH&E will demonstrate the ability to broaden education and life-long learning necessary to understand safety, health, and environment issues within a global and social context.

Performance Criteria	Below Expectations 1	Progressing to Criteria 2	Meets Criteria 3	Exceeds Criteria 4	Score
<p>1. Students are encouraged to become a member of ASSE (American Society of Safety Engineers) Southeastern Louisiana University Student Section and be actively involved in the events and activities organized by the Student Section. At least 50% of upper-level students are ASSE members.</p>	<p>Student shows no interest in becoming a member of ASSE Southeastern Louisiana University Student Section and is not involved in the events and activities organized by the Student Section. Lower than 50% of upper-level students are ASSE members.</p>	<p>Student is interested in becoming a member of ASSE Southeastern Louisiana University Student Section and is involved in the events and activities organized by the Student Section, but does not become a member eventually. Close to 50% of upper-level students are ASSE members.</p>	<p>Student becomes a member of ASSE Southeastern Louisiana University Student Section and is generally actively involved in the events and activities organized by the Student Section. At least 50% of upper-level students are ASSE members.</p>	<p>Student becomes a member of ASSE Southeastern Louisiana University Student Section and is consistently actively involved in the events and activities organized by the Student Section. 75% of upper-level students are ASSE members.</p>	
<p>2. Students are encouraged to continue personal growth and improvement by pursuing the widely recognized certifications including Certified Safety Professional (CSP) and Certified Industrial Hygienist (CIH). As measured on the Southeastern Alumni Survey, 50% of the OSH&E graduates will become CSPs.</p>	<p>Student shows no interest in continuing personal growth and improvement by pursuing the widely recognized certifications including CSP and CIH. As measured on the Southeastern Alumni Survey, lower than 50% of the OSH&E graduates will become CSPs.</p>	<p>Student is interested in continuing personal growth and improvement by pursuing the widely recognized certifications including CSP and CIH. As measured on the Southeastern Alumni Survey, close to 50% of the OSH&E graduates will become CSPs.</p>	<p>Student takes early steps to continue personal growth and improvement by pursuing the widely recognized certifications including CSP and CIH. As measured on the Southeastern Alumni Survey, 50% of the OSH&E graduates will become CSPs.</p>	<p>Student consistently continues personal growth and improvement by pursuing the widely recognized certifications including CSP and CIH. As measured on the Southeastern Alumni Survey, 75% of the OSH&E graduates will become CSPs.</p>	

Appendix E

Occupational Safety, Health and Environment

Bachelor of Science in Occupational Safety, Health and Environment

The Bachelor of Science degree program in Occupational Safety, Health, and Environment (OSH&E) is designed to provide an academically comprehensive curriculum that prepares graduates with the ability and competency to become highly qualified safety, industrial hygiene, and environmental professionals. Curriculum sheets are available for this degree:

- [2005-2006 Curriculum Sheet](#)
- [2006-2007 Curriculum Sheet](#)
- [2007-2008 Curriculum Sheet](#)
- [2008-2009 Curriculum Sheet](#)
- [2009-2010 Curriculum Sheet](#)

Associate of Applied Science in Occupational Safety, Health and Environment

The Associate of Applied Science degree program in Occupational Safety, Health, and Environment (OSH&E) curriculum sheet is:

- [2009-2010 Curriculum Sheet](#)

See Our Brochure

OSH&E Faculty

Full-time Members

Mr. Lawrence Mauerman, MAS, PE, CSP

<http://www2.selu.edu/Academics/Faculty/lmauerman/>

Coordinator, OSH&E Program

Specialty: Occupational Safety and Health, Industrial Hygiene, Safety Management

Dr. Lu Yuan, ScD

<http://www2.selu.edu/Academics/Faculty/lyuan/>

Assistant Professor

Specialty: Occupational Ergonomics and Safety, Biomechanics

Dr. Ephraim Massawe, ScD
Assistant Professor
Specialty: Industrial Hygiene, Environmental Health

Adjunct Instructors*

Mr. Steven P. Pereira, CSP
President, Professional Safety Associates, Inc.

Mr. Richard Matherne, CIH
Senior Industrial Hygiene Advisor/Product Stewardship
Albemarle Corporation

Mr. Wayne LaCombe, MSPH, CSP
MOH – Industrial Hygiene
ExxonMobil, Baton Rouge

Mr. William J. Kerr, CSP
Eagle Environmental Services, Inc.

*-Also on OSH&E Industrial Advisory Committee

OSH&E Industrial Advisory Committee

Southeastern's OSH&E Program Industrial Advisory Committee (IAC) consists of representatives from industry, government agencies, and professional safety, health, and environmental organizations from the greater New Orleans/Baton Rouge area. They meet regularly with Southeastern OSH&E faculty and administration to provide:

- Feedback on the effectiveness of the program in providing quality graduates to fill OSH&E positions in the area workforce;
- Advice on curriculum development to assure that the degree program maintains relevancy and meets the needs of area employers;
- Contact and coordination with area employers for program support in including, but not limited to: internships, plant field trips, guest speakers, equipment acquisition, scholarships, etc.;
- Assistance in preparation for program accreditation through the Accreditation Board for Engineering Technology (ABET).

Internship Information

Our students, as part of their curriculum, have served internships with outstanding regional and national employers in manufacturing, construction, chemical, refining, consulting companies and government agencies. We are grateful for the cooperation of these organizations. Companies who desire an OSH&E intern please contact Dr. Peter Territo at 985-549-2071 or pterrito@selu.edu for more information!

Scholarships

Both departmental & external scholarships are available. In particular, students in the OSH&E program are highly encouraged to apply for the following scholarships:

Linda Sullivan Scholarship

http://www.selu.edu/acad_research/depts/cs_it/scholarships/

Greater Baton Rouge Chapter – Don Jones Excellence in Safety Scholarship

<http://www.asse.org/foundation/scholarships/scholarships.php#>

Appendix F

YEAR 2009-2010

ADVISOR: _____

STUDENT PHONE NUMBER: _____

**CURRICULUM IN INDUSTRIAL TECHNOLOGY
ASSOCIATE OF APPLIED SCIENCE DEGREE
OCCUPATIONAL SAFETY, HEALTH & ENVIRONMENT CONCENTRATION**

NAME: _____

W#: _____

COMPUTER SCIENCE (3 hrs)
CMPS 173 _____ 3_____

ENGLISH (6 hrs)

ENGL 101 _____ 3_____

ENGL 102 _____ 3_____

Proficiency _____

MUST show proficiency

MUST make a minimum grade of "C" in all major courses

Occupational Safety, Health, & Environment (24 hrs)

↓ OSHE 111 _____ 3_____

↓ OSHE 112 _____ 3_____

↓ OSHE 121 _____ 3_____

↓ OSHE 141 [241] _____ 3_____

↓ OSHE 231 _____ 3_____

↓ OSHE 242 _____ 3_____

↓ OSHE 251 _____ 3_____

↓ OSHE 261 _____ 3_____

MATHEMATICS (9 hrs)

MATH 161 _____ 3_____

MATH 162 _____ 3_____

MATH 241 _____ 3_____

Proficiency _____

NATURAL SCIENCE (12 hrs)

GBIO 151 _____ 3_____

BIOL 152 _____ 1_____

CHEM 101 _____ 3_____

CLAB 103 _____ 1_____

PHYS 191 _____ 3_____

PLAB 193 _____ 1_____

OTHER (6-9 hrs)

SE 101 _____ 0-3_____

PSYC 101 _____ 3_____

COMM 211 _____ 3_____

NO 100-LEVEL COURSE WILL BE ACCEPTED WITHOUT APPROVAL OF THE DEPARTMENT HEAD.

APPROVED: _____

(T) = Course Taking this Semester
* () = Transfer Credits

TOTAL SEMESTER HOURS: 60 - 63
TOTAL MAJOR HOURS: 24
(NOTE: ½ of all major hours must be taken at SLU.)

ADVISOR: _____ STUDENT PHONE NUMBER: _____

**CURRICULUM IN OCCUPATIONAL SAFETY, HEALTH, AND ENVIRONMENT
BACHELOR OF SCIENCE DEGREE**

NAME: _____

W#: _____

BUSINESS (6 hrs)

ECON 201 ___ 3 ___
MGMT 351 ___ 3 ___

Industrial Technology (6 hrs)

↓ IT 242 ___ 3 ___
↓ IT 391 or 492 ___ 3 ___

MATHEMATICS (9 hrs)

MATH 161 ■ ___ 3 ___
MATH 162 ___ 3 ___
MATH 241 ___ 3 ___
Proficiency ___

COMPUTER SCIENCE (3 hrs)

CMPS 173 ___ 3 ___

**Occupational Safety, Health,
and Environment (42 hrs)**

↓ OSHE 111 ___ 3 ___
↓ OSHE 112 ___ 3 ___
↓ OSHE 121 ___ 3 ___
↓ OSHE 141 [241] ___ 3 ___
↓ OSHE 231 ___ 3 ___
↓ OSHE 242 ___ 3 ___
↓ OSHE 251 ___ 3 ___
↓ OSHE 261 ___ 3 ___
↓ OSHE 341 ___ 3 ___
↓ OSHE 381 [281] ___ 3 ___
↓ OSHE 382 [282] ___ 3 ___
↓ OSHE 421 [321] ___ 3 ___
↓ OSHE 424 [324] ___ 3 ___
↓ OSHE 471 [371] ___ 3 ___

NATURAL SCIENCE (23 hrs)

GBIO 151 ___ 3 ___
BIOL 152 ___ 1 ___
CHEM 101 ___ 3 ___
CLAB 103 ___ 1 ___
PHYS 191 ___ 3 ___
PLAB 193 ___ 1 ___
CHEM 102 ___ 3 ___
CLAB 104 ___ 1 ___
ZOO 241 ___ 4 ___
CHEM 261 ___ 3 ___

ENGLISH (12 hrs)

ENGL 101 ___ 3 ___
ENGL 102 ■ ___ 3 ___
ENGL 230, 231,
 or 232 ___ 3 ___
ENGL 322 ___ 3 ___
Proficiency ___

OTHER (12-15 hrs)

SE 101 ___ 0-3 ___
PSYC 101 ___ 3 ___
COMM 211 ___ 3 ___
HIST 101, 102,
 201, or 202 ___ 3 ___
ART, DNCE, MUS,
 or THEA ___ 3 ___

- **MUST** show proficiency
- ↓ **MUST** make a minimum grade of "C" in all major courses
- ⊙ **Students must schedule their professional electives with the approval of their advisor. Professional electives are to be selected from the following two groups and at least ONE course must be from Group I.**

Group I - OSHE Courses
311, 322, 323, 441, 451

Group II - Other Courses
IT 264, IT 322, ACCT 200,
CJ 312, CJ 411, GBIO 377,
HS 360, HS 362

Professional Electives (9 hrs)

↓ _____ ___ 3 ___
↓ _____ ___ 3 ___
↓ _____ ___ 3 ___

**NO 100-LEVEL COURSE
WILL BE ACCEPTED AS A
PROFESSIONAL ELECTIVE
WITHOUT APPROVAL OF
THE DEPARTMENT HEAD.**

APPROVED: _____

(T) = Course Taking this Semester
* () = Transfer Credits

TOTAL SEMESTER HOURS: 122-125
TOTAL MAJOR HOURS: 57
(NOTE: ½ of all major hours must be taken at SLU.)

4-YEAR BACHELOR OF SCIENCE IN OCCUPATIONAL SAFETY, HEALTH, AND ENVIRONMENT (OSH&E)

Required OSHE Courses

111. Introduction to Occupational Safety and Health. Credit 3 hours. This course introduces general safety and health concepts. Major topics include: occupational safety and health terms, historical developments, program concepts and terms, legislative overview, including worker's compensation law, problem identification, hazard recognition, evaluation and control concepts, and an introduction to measurement and evaluation.

112. Design of Hazard Controls. Credit 3 hours. Prerequisites: Current enrollment or prior credit for OSHE 111. This course studies the application of scientific and engineering principles and methods to achieve optimum safety and health conditions through the analysis and design of process, equipment, products, facilities, operations, and environments. Major topics include product design, plant layout, construction, maintenance, pressure vessels and piping, mechanical systems, materials handling and storage, ventilation, power tools, electrical equipment, and transportation vehicles and systems.

121. Safety and Health Program Management and Administration. Credit 3 hours. Prerequisite: Enrollment in or prior credit for OSHE 111. This course studies the application of proven management principles and techniques to the management of safety and health and loss control programs. Major topics will include; planning, organizing, budgeting, resourcing, operating, implementing, and evaluating safety functions.

141. [241]. Principles of Industrial Hygiene & Toxicology. Credit 3 hours. This course introduces the basic industrial hygiene principles of anticipation, recognition, evaluation, and control of workplace conditions as they relate to occupational health. Major topics include: a variety of occupational hazards including air contaminants, chemical hazards, biological hazards, and physical hazards.

231. Safety Laws, Regulations, and Standards. Credit 3 hours. This course studies the development processes, sources, and applications for minimum safety requirements established by laws, regulations, standards, and codes. Major topics will include OSHA General Industry and Construction Standards, the enforcement of safety standards, and the role of NIOSH and ACGIH in the safety movement.

242. Ergonomics. Credit 3 hours. Prerequisite: Enrollment in or prior credit for Mathematics 241 and OSHE 141[OSHE 241]. This course explores ergonomic design principles which involve the planning and adapting of equipment and tasks to promote the comfort and efficiency of workers. Major topics include: human characteristics, physiology, and anthropometry and the application of these principles to workstations, tool design, and material handling procedures.

251. Environmental Laws and Regulations. Credit 3 hours. This course is an introduction to federal and state environmental regulations which impact industry. Major topics include hazardous waste management, disposal and cleanup, prevention of air, water, and soil contamination and environmental program management.

261. Fire Protection and Prevention. Credit 3 hours. This course introduces the basic principles of fire and fire prevention in the work place. Major topics include: evaluating existing and planned facilities from a fire and explosion standpoint, and applying the basic principles of hazard recognition, evaluation, and control when developing fire prevention and emergency response activities.

341. Field Methods of Industrial Hygiene and Toxicology. Credit 3 hours. Prerequisites: Mathematics 241 and OSHE 141[OSHE 241]. This course presents an examination of the methods used by the industrial hygienist for the identification and assessment of health hazards in the workplace. Major topics include: establishment and use of methodologies to sample and evaluate exposures to air contaminants (gases, vapors, aerosols, and particulates), microorganisms and allergens, noise, heat, and cold stress, electrical and magnetic radiation, and ionizing and ultraviolet radiation. The course also includes equipment use, maintenance, and calibration.

381. [281]. Safety in Chemical and Process Industries. Credit 3 hours. Prerequisites: Enrollment in or prior credit for Chemistry 101 and Physics 191. The course introduces the fundamentals of chemical and process industry safety. Major topics include: toxic, fire, and pressure hazards inherent in chemical plants and petroleum refineries, and the methods used to identify, assess, and eliminate those hazards. It also introduces students to federal safety regulations for process safety management.

382. [282]. Construction Safety. Credit 3 hours. Prerequisites: Enrollment in or prior credit for OSHE 111 and OSHE 121. The course studies the application of management principles, communication and human relations factors, safety/health rules, industry and federal standards, accident investigation, and the job planning phases in the construction environment.

421. [321]. Measurement of Safety Performance and Accident Investigation and Analysis. Credit 3 hours. Prerequisite: Enrollment in or prior credit for Math 241. This course presents methods to objectively evaluate a company's safety progress. The course covers two distinct topics: (1) measuring safety performance, and (2) incident investigation and analysis. The first segment of the course addresses ways of measuring safety performance objectively and subjectively using safety audits, inspections, observations, performance appraisal systems, and injury/illness statistics. The second segment of the course addresses the causes of accidents, systematic ways of conducting investigations, documenting the findings, causes and other significant data, and drafting recommendations.

424. [324]. System Safety Methodologies. Credit 3 hours. Prerequisites: Mathematics 241, OSHE 111, and OSHE 121. The course presents the concepts of Risk Management and Loss Control through the use of systematic approaches to hazard anticipation, identification, evaluation and control. Major topics include: an introduction to qualitative methods of evaluating the hazards and risks associated with systems, processes, equipment, and other entities. It also includes a review of techniques for mitigating or managing identified risks.

471. [371]. Education and Training Methods for Occupational Safety and Health. Credit 3 hours. This course introduces the concepts of adult training and education with emphasis on occupational safety and health. Major topics include: instructional system design, including performing a training needs assessment tasks analysis, program design goals and objectives, performance evaluation, delivery methods and media; computer-based training methods; systems to manage costs; and record keeping.

Existing Professional Elective OSHE Courses

311. Safety & Health Program Development. Credit 3 hours. This course presents the key elements necessary to develop or to assess occupational safety and health programs. Major topics include management commitment and employee involvement; worksite analysis, hazard correction and control; training, and evaluation.

322. Behavioral Aspects of Safety. Credit 3 hours. Prerequisite: Psychology 101. This course will introduce students to the application of scientific research based principles and methods to bring about change in the work culture through attitude, behavior, and environmental conditions. Specific topics will include traditional approaches and philosophies for improving safety, environmental effects, incentives, developing and building cultural change, identifying critical behavior, developing checklists, giving and receiving recognition and measuring performance.

323. Product Safety and Liability. Credit 3 hours. This course examines the importance of considering the safety of a product in its ultimate use. Major topics include: aspects of product design, intended and improper use, and potential injury mechanisms. It uses classic product liability case studies to provide practical application of the principles learned. It also studies manufacturer liabilities through injury tort actions.

441. Industrial Toxicology. Credit 3 hours. Prerequisites: General Biology 151, Zoology 241, and OSHE 141[OSHE 241]. This course examines the effects of industrial toxicants on the human body. Major topics include: the discipline of toxicology, acute and chronic exposures and effects, routes and characteristics of exposures, target organs and systems, dose and response, and carcinogenesis. It also discusses the toxic characteristics of various classes of toxic materials.

451. Hazardous Materials Management. Credit 3 hours. Prerequisite: OSHE 251. This course examines acceptable policies, procedures, and methods for the handling of oil and hazardous wastes produced by industry. Major topics include: advanced aspects of risk assessment, applicable environmental legislation, waste characterization and site assessment, waste minimization and recovery, chemical, physical, and biological waste treatment, thermal waste treatment, landfill disposal and injection well disposal. It also includes a section on the transportation of hazardous wastes.

Proposed Additional Professional Electives

INDUSTRIAL TECHNOLOGY (IT)

264. Industrial Fluid Power. Credit 3 hours. Theory and practice of hydraulic and pneumatic power for industrial production. Functional examination of units: pumps, valves, boosters, etc. Simulated systems used to emphasize design and other industrial materials. Two hours of lecture and two hours of laboratory per week. Laboratory fee: \$45.00.

322. Materials Science and Metallurgy. Credit 3 hours. Prerequisite: Industrial Technology 242. Study of the major materials used in industrial engineering, considering structure and properties, testing methods (destructive and nondestructive), and microscopic examination. Two hours of lecture and two hours of laboratory a week. Laboratory fee: \$45.00.

ACCOUNTING (ACCT)

200. Introduction to Financial Accounting. Credit 3 hours. Prerequisite: Sophomore standing. An introduction to corporate financial accounting systems including preparing, interpreting, and using financial statements.

CRIMINAL JUSTICE (CJ)

312. Private and Public Sector Security. Credit 3 hours. Prerequisites: Completion of CJ 101, 201, 202, 204, and 205 or permission of Department Head. This course provides an overview of the vulnerability of business, industrial and government sectors to criminal infiltration and compromise from both internal and external sources, with special emphasis on threats to cyber-security, and protection of physical assets and employees/agents.

411. International Crime and Terrorism. Credit 3 hours. Prerequisites: Completion of CJ 101, 201, 202, 204, and 205 and junior/senior standing, or permission of Department Head. This course provides an overview of threats to internal security including organized criminal enterprises, and state and non-state terror activities.

HEALTH STUDIES (HS)

360. Introduction to Epidemiology. Credit 3 hours. Prerequisites: HS 132 or 133, MATH 160 or 161, Math 241, and junior standing or permission of department head. An introduction to the study of distribution of health events in human populations. Methods of assessing health states in populations by the use of morbidity and mortality data. Includes disease tracking and control methods for use in health care decisions. Major types of epidemiological investigations are also studied.

362. Promoting Health in the Worksite. Credit 3 hours. Prerequisites: HS 132 or 133, 162 or 251 or 252, junior standing or permission of department head. Introduction to the design and implementation of health programs in a variety of worksite settings. Attention to concerns of administrative and staff support, recidivism, specific interventions, and policy.

GENERAL BIOLOGY (GBIO & BIOL)

377. Applied Biostatistics. Credit 4 hours. Prerequisite: Mathematics 161 or consent of the Department Head. Basic concepts of biostatistics and sampling strategy; measures of central tendency and dispersion; Z, t, chi-square, and F distributions; test of hypothesis, error rates, and maximizing power; analysis of variance and regression. Strong emphasis on, and many examples of, field and laboratory oriented biological research problems. Three hours of lecture and two hours of laboratory per week.