

LSC Use Only No:	LSC Action-Date:	UWUCC USE Only No.	UWUCC Action-Date:	Senate Action Date:
		02-39f	App 2/4/03	App 2/25/03

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

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Proposing Department/Unit Safety Sciences	Phone 7-3275

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

1. Course Proposals (check all that apply)

New Course Course Prefix Change Course Deletion
 XXX Course Revision Course Number and/or Title Change Catalog Description Change

SAFE 412 Hazard Prevention Management	
<u>Current</u> Course prefix, number and full title	<u>Proposed</u> course prefix, number and full title, if changing

2. Additional Course Designations: check if appropriate

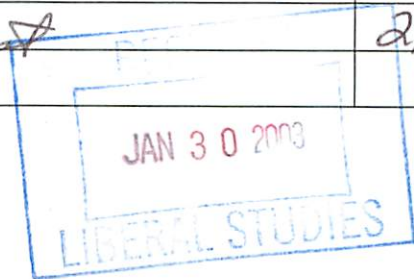
This course is also proposed as a Liberal Studies Course. Other: (e.g., Women's Studies, Pan-African)
 This course is also proposed as an Honors College Course.

3. Program Proposals

New Degree Program Program Title Change Program Revision
 New Minor Program New Track Other
 Catalog Description Change

<u>Current</u> program name	<u>Proposed</u> program name, if changing
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4. Approvals		Date
Department Curriculum Committee Chair(s)	<i>Lon H. Ferguson</i>	10/19/02
Department Chair	<i>Lon H. Ferguson</i>	10/19/02
College Curriculum Committee Chair	<i>[Signature]</i>	11-22-02
College Dean	<i>[Signature]</i>	25/10/02
Director of Liberal Studies *		
Director of Honors College *		
Provost *		
Additional signatures as appropriate: (include title)		
UWUCC Co-Chairs	<i>Gail Schmitt</i>	2/4/03



Course Revision: SAFE 412 Hazard Prevention Management

Part II. Description of the Curriculum Change

1. Syllabus of Record.

The new syllabus of record for this revised course is attached in Appendix A.

2. A summary of the proposed revisions:

a. Remove the following specific content areas which are covered in existing courses in the program:

- The Risk Management Process
- Role of Insurance
- Establishing a Risk Management Program

b. Add the following content area:

- Loss Management Information Systems which will include the categories of data to collect via loss incident investigation procedures. These categories include time, date, and location of the incident. Cost and cause categories are also studied in detail.

c. Rename the Unit on Total Quality Management to Cause and Effect Sequencing. This was done because additional coverage of various methods to diagram the sequence of the events leading up to loss incidents was added to this unit.

d. Remove the following objectives to reflect the above changes in the content:

- given risk data, conduct a risk assessment.
- explain the different kinds of insurance. Given claim data, calculate workers compensation insurance ratings. Explain the process for litigating claims.
- given data about hazards, develop a risk management program that will prevent hazards at a reasonable cost.

3. Justification/rationale for the revision.

The above changes were based on recommendations from the department's advisory committee meeting and the Department Curriculum Committee review meeting on May 3, 2002. During this meeting the syllabus of SAFE 412 was reviewed as well as course objectives and outcomes. Based on this review an action plan was created to make the above content changes to the course.

4. The old syllabus of record.

The old syllabus of record is attached in Appendix B.

5. Liberal Studies course approval.

These changes do not affect the Liberal Studies requirements.

Part III. Letters of Support or Acknowledgement

These course changes will not affect other departments, therefore letters of support from other departments were not obtained.

Appendix A: New Syllabus of Record

I. Catalog Description

SAFE 412 Hazard Prevention Management	3 class hours
	3 lab hours
Prerequisites: MATH 217 and MGMT 311	4 credit hours (3c-31-4cr)

Examine various safety management techniques to identify and prevent the occurrence of hazardous behavior and conditions. Develop methods capable of extracting accurate, meaningful data, methods of collecting, codifying and processing hazard and loss incident information, and utilizing data retrieval systems to be used in cost/benefit decision-making for hazard prevention, safety program and performance evaluation.

II. Course Objectives

The students will be able to:

- A. List program elements within the safety function and state one specific procedure contained in each element.
- B. Describe the responsibility of each manager for hazard prevention and identify who was responsible for preventing hazards that occurred.
- C. Develop a safety policy for a company and determine whether a safety committee is needed.
- D. Determine what programs are needed, develop goals for the programs, and write procedures that will achieve the goals of needed programs.
- E. Use Fishbone diagrams, run charts, control charts, Pareto charts, scatter diagrams, and force field analysis to determine action to prevent recurrence of the hazardous behavior and conditions.
- F. Determine who was responsible for allowing the condition to be created in the workplace and state the action needed to prevent recurrence of the hazardous condition and who will take action. Also, using the same data, measure the effectiveness of the company's hazard prevention procedures.
- G. Determine the causes of each unsafe act as being: lack of training, lack of motivation, and from creating an environment that does not fit the mental and physical capabilities of the employees.
- H. Analyze hazardous behaviors to determine obstacles to safe behavior and ways to remove those obstacles and develop a safe behavior reinforcement program.

- I. Analyze the hazardous behaviors that were caused by lack of training and write behavioral objectives, determine teaching methods, and write lesson plans to train employees to remove these causes of hazardous behavior.
- J. Describe methods to calculate and collect costs resulting from the occurrence of hazards. Given cost and cause data, conduct cost/benefit analyses for hazard prevention.
- K. Measure the effectiveness of a company's safety programs and measure the accountability of each of the managers regarding their safety performance.

III. Course Outline

- A. Scope of the Safety Function (2 hours)
 - 1. Injury Prevention
 - 2. Occupational Illness Prevention
 - 3. Property Loss Prevention
 - 4. Environmental Protection
- B. Principles of Hazard Prevention (2 hours)
 - 1. Line and Staff Management Responsibility, Authority and Accountability
 - 2. Safety Manager's Role
- C. Responsibilities for Hazard Prevention (3 hours)
 - 1. Staff and Line Department Responsibilities in Hazard Prevention Programming (Engineering, Maintenance, Purchasing, Accounting, Line Management, Human Resources, and Legal).
- D. Safety Policy Development (2 hours)
 - 1. Criteria for a Safety Policy
 - 2. Constructing a Philosophy
 - 3. Developing Objectives
 - 4. Safety Committees
- E. Hazard Prevention Programming (2 hours)
 - 1. Completing a Program Analysis
 - 2. OSHA's Program Management Guidelines
 - 3. Developing Program Goals
 - 4. Developing Procedures

- F. Cause and Effect Sequencing (3 hours)
1. Fishbone Diagrams
 2. Run Charts
 3. Control Charts
 4. Pareto Charts
 5. Scatter Diagrams
 6. Force Field Analysis
 7. Universal Model
 8. Pope's Systems Safety Management
- G. Hazardous Condition Prevention (2 hours)
1. Systems Safety Management Loss Incident Sequence Model
 2. Using Inspections
 3. Measuring the Effectiveness of Programs
- H. Cause Analysis of Hazardous Behavior (3 hours)
1. Hazardous Act Analysis Model
 2. Causes of Hazardous Behavior
 3. Hazardous Behavior Antecedents
- I. Safe Behavior Reinforcement (3 hours)
1. Performance Discrepancies
 2. Defining Safe Behavior
 3. Job Specific Critical Behavior Inventories
 4. Safety Sampling
- J. Training to Prevent Hazardous Behavior (4 hours)
1. Training Methods
 2. Performance Analyses
 3. Behavioral Objectives
 4. Lesson Plans
- K. Loss Incident Costs (3 hours)
1. Medical and Workers Compensation
 2. Facility and Equipment Rental and Replacement
 3. Labor to Repair, Replace or Clean-up
 4. Product Damage
 5. Government Fines, and Legal Fees
 6. Costing Rates
 7. Cause and Cost Data Collection Procedures

L. Safety Program Evaluation (3 hours)

1. OSHA and MSHA Injury Rates
2. Safe-T-Score Technique
3. Criteria to Measure Program Effectiveness.

M. Management Performance Evaluation (3 hours)

1. Data to Measure Individual Managers for Accountability Purposes (Incident Frequency and Severity, Timeliness and Completeness of Loss Incident Investigations, Follow Through of Corrective Action and Departmental Hazard Prevention Procedure Development)

N. Loss Management Information Systems (3 hours)

1. Categories of Data from Loss Incident Investigations (Time, Date, Location, Cost and Cause Data)
2. Using Computer Program to Investigate and Analyze
3. Cost-Benefit Analysis

O. Course Examinations (4 hours)

P. Culminating Activity (2 hours)

Title of Laboratory Exercises	# of Hours	Lecture Units Covered
Defining a System for Analysis	3	A,B,C
Developing a Policy	3	D, N
Assessing Hazard Prevention Program Needs	3	E, N
Developing Programs	3	E
Assessing Programs via Cause and Sequencing Analysis	3	F
Analyzing Hazardous Conditions	3	G, N
Analyzing Hazardous Behavior	3	H, N
Reinforcing Safe Behavior	3	I

Title of Laboratory Exercises	# of Hours	Lecture Units Covered
Devising Training Programs	3	J, N
Creating Training Devices and Sessions	3	J
Analyzing Decisions via Cost/Benefit	3	K, N
Evaluating Safety Programs	3	L
Measuring Management Accountability	3	M
Developing a loss incident scenario and placing the incident data into LoMIS	3	N

IV. Evaluation Methods

The faculty person assigned to teach this course could be one of several faculty within the Safety Sciences Department. What follows is an example of the evaluation methods and weighting used by one of those faculty members.

30% Exams: There will be written exams consisting of combinations of multiple choice, true/false, matching, completion, and essay questions; or other interactive exams. Make-up exams are at the discretion of the individual faculty member.

10% Quizzes: Periodic quizzes will be given. Unannounced quizzes may be used. Make-up quizzes are at the discretion of the individual faculty member.

5% Homework: Periodic out-of-classroom assignments will be given.

10% Term Papers/Projects: Each student will prepare formal papers or projects on a topic approved by the individual faculty member.

5% In-class Writing: Each student will prepare various assignments in class utilizing free-style writing techniques as scheduled by the individual faculty member.

10% Presentations: Each student will present orally a topic approval by the individual faculty member.

5% Class Participation: : This includes but is not limited to individual participation in whole class and small group discussions and other brief class presentations.

25% Laboratory Exercises: Laboratory exercises are a regular requirement of this course. Students will complete fourteen (14) laboratory exercises, each of which is described, discussed, interpreted, and reported in a formal technical report.

Extra credit may be assigned to any one or more of the above evaluation methods at the discretion of the instructor.

V. Example Grading Scale

The grading scale is as follows:

A	90%-100%
B	80%-89%
C	70%-79%
D	60%-69%
F	< 60%

At the discretion of the faculty member, a grading curve that results in appropriate distribution of grades may be used in place of the scale described above.

VI. Attendance Policy

Although there is no formal attendance policy for this class, student learning is enhanced by regular attendance and participation in class discussions and the university expects all students to attend class.

VII. Required Textbooks, Supplemental Books and Readings

Required and supplemental readings will come from the following list:

Pope, William C. Managing for Performance Perfection: The Changing Emphasis. Weaverville, NC: Bonnie Brae, 1990.

Lack, Richard (ed). Essentials of Safety and Health Management. Boca Raton, FL: CRC Press, 1996.

VIII. Special Resource Requirements

None

IX. Bibliography

Brassand, Michael. (1989). The Memory Jogger Plus: Featuring the Seven Management and Planning Tools. Methuen, MA: GOAL/QPC.

Coyle, Ian R., et al. (1995) Safety Climate. Journal of Safety Research 26 (4).

Geller, E. Scott, et al. (1989). Behavior Analysis Training for Occupational Safety. Newport, VA: Make-A-Difference, Inc. (also companion Workbook and Discussion Workbook)

Krause, Thomas R., et al. (1990). The Behavior-based Safety Process: Managing Involvement for an Injury-free Culture. New York, NY: Van Nostrand Reinhold.

Mager, Robert F. and Peter Pipe. (1993) Analyzing Performance Problems: Or You Really Oughta Wanna, 3rd ed. Belmont, CA: Lake Publishing.

Manuele, Fred A. (1995). Guidelines: Designing for Safety. (A technical paper from Marsh & McLennan M&M Protection Consultants).

Peterson, Dan. (1989). Safe Behavior Reinforcement. Goshen, NY: Aloray.

Pierce, F. David. (1995). Total Quality for Safety and Health Professionals. Rockville, MD: Government Institute, Inc.

Samson, Thomas M. and Brian O. Hurt. (1995) Managing health and safety data. Occupational Health and Safety. December.

Historical Bibliographies

Chekanski, R. Philip. (1974). A loss control information system: techniques for its implementation. Occupational Hazards – Focus Section: Journal of the National Safety Management Society, April.

Nolden, Carol. (1983). The work order system: key to effective maintenance management,” Plant Engineering, October.

Police, Jacquelyn Marie. (1979). The ‘systems’ approach in accident reporting. Occupational Hazards – Focus Section: Journal of the National Safety Management Society.

Wright, R. Loss Management: International Management Audit System and LOMIS Incident Report Code Manual. Toronto: Gulf Oil of Canada, Ltd.

Appendix B: Old Syllabus of Record

I. Catalog Description

SAFE 412 Hazard Prevention Management

4 credits
3 lecture hours
3 laboratory hours
(3c-31-4cr)

Prerequisites: MATH 217, MGT 311, Jr Standing

Teaches various safety management techniques to identify and prevent the occurrence of hazardous behavior and conditions. Devices methods capable of extracting accurate, meaningful data, methods of collecting, codifying and processing hazard and loss incident information, and utilizing data retrieval systems to be used in cost/benefit decision-making for hazard prevention, safety program and performance evaluation, and risk management.

II. Course Objectives

The students will be able to:

- A. list program elements within the safety function and state one specific procedure contained in each element.
- B. given a management structure, describe the responsibility of each manager for hazard prevention.
- C. given scenarios about the origins of hazards, state who was responsible for preventing the hazards that occurred.
- D. given information about a company, develop a safety policy for that company. Using the same information, determine whether a safety committee is needed. If one is needed, develop an appropriate committee charter.
- E. given data about a company, determine what programs are needed, develop goals for the programs, and write procedures that will achieve the goals of needed programs.
- F. given data about loss incidents including hazardous behavior and conditions, use Fishbone diagrams, run charts, control charts, Pareto charts, scatter diagrams, and force field analysis to determine action to prevent recurrence of the hazardous behavior and conditions.

- G. given data about hazardous conditions at a company and the organization of that company, determine who was responsible for allowing the condition to be created in the workplace and state the action needed to prevent recurrence of the hazardous condition and who will take action. Also, using the same data, measure the effectiveness of the company's hazard prevention procedures.
- H. given descriptions of hazardous behavior, determine the causes of each act as being: lack of training, lack of motivation, and from creating an environment that does not fit the mental and physical capabilities of the employees. Also, analyze hazardous behaviors to determine obstacles to safe behavior and ways to remove those obstacles and determine new antecedents and consequences so that the hazardous behavior will not recur.
- I. given data about a work environment, develop a safe behavior reinforcement program for this environment.
- J. analyze the hazardous behaviors that were caused by lack of training and write behavioral objectives, determine teaching methods, and write lesson plans to train employees to remove these causes of hazardous behavior.
- K. describe methods to calculate and collect costs resulting from the occurrence of hazards. Given cost and cause data, conduct cost/benefit analyses for hazard prevention.
- L. given various measurement data about a company, measure the effectiveness of the company's safety programs.
- M. given the safety efforts and hazard results of a company and an organizational structure for the student, measure the accountability of each of the managers regarding their safety performance.
- N. given risk data, conduct a risk assessment.
- O. explain the different kinds of insurance. Given claim data, calculate workers compensation insurance ratings. Explain the process for litigating claims.
- P. given data about hazards, develop a risk management program that will prevent hazards at a reasonable cost.

III. Course Outline

A. Scope of the Safety Function (1 hours)

Covered is the scope of the safety function: injury prevention, occupational illness prevention, property loss prevention, and environmental protection. Each major scope area is subdivided as follows. Injury prevention: employees while on the job, employees and family members while off the job, visitor safety, contractor safety, consumer protection and trespasser protection. Occupational illness prevention: toxic materials control, hearing conservation, ionizing radiation protection, non-ionizing radiation protection, heat stress control, and ergonomics. Property Loss Prevention: product, equipment/facilities, fleet, fire protection, disaster preparedness, and vandalism and sabotage prevention. Environmental pollution prevention: air, water, hazardous waste disposal, radioactive waste disposal, noise pollution prevention, solid waste disposal.

B. Principles of Hazard Prevention (2 hours)

Line and staff management responsibility, authority, and accountability for preventing hazards are covered. The interaction between line and all staff positions is covered as it pertains to preventing hazards. The safety manager's role, responsibilities, authority, and methods of being held accountable within the management organization is explained.

C. Responsibilities for Hazard Prevention (2 hours)

The responsibilities for each staff and line department in hazard prevention programming are discussed with the idea of knowing to whom hazard prevention duties should be assigned. This involves discussing the responsibilities that process engineering, facilities engineering, maintenance, purchasing, accounting, upper line management, human resources, scheduling, and the legal departments have to create a hazard-free work environment.

D. Safety Policy Development (2 hours)

The students are introduced to the value of and criteria for developing a written safety policy statement. Covered are the advantages of having a written safety policy. Constructing a philosophy is taught. Developing objectives that are measurable, achievable, legal and ethical, consistent with other policies, understandable, and profit-oriented is taught. Defining the line and staff responsibilities, authority, and accountability as well as decision-making criteria are presented. Advantages and disadvantages of committees are discussed. Writing a committee charter is taught.

E. Hazard Prevention Programming (2 hours)

Following from the development of the safety policy statement, the student will be presented with the program analysis technique to determine what programs are needed, including those within OSHA's Program Management Guidelines. Once the program

needs are determined, developing program goals is taught; the goals being the removal of the causes of hazardous behavior and conditions. Selecting the procedures that are necessary to meet the program goals is presented. Developing procedures via flowcharting is presented. Using the responsibility assignments described in Unit Three, the student will be shown how to develop in chronological order the actions that must be taken to achieve program goals.

F. Total Quality Management in Hazard Prevention (3 hours)

Fishbone diagrams, run charts, control charts, Pareto charts, scatter diagrams, and force field analysis are introduced as a way to determine hazards and hazard prevention activities.

G. Hazardous Condition Prevention (2 hours)

A systems safety management loss incident sequence model is covered to show the causes of hazardous conditions. Methods to determine the causes for the occurrence of hazardous conditions are explored. Determining the conditions is completed. The idea that hazardous conditions result from hazardous behavior is explored. Using inspections to find and rate hazardous conditions as a way to measure the effectiveness of programs designed to prevent hazardous conditions. From this measurement management performance in preventing hazards is appraised.

H. Cause Analysis of Hazardous Behavior (3 hours)

A hazardous act analysis model is used to determine the cause of the hazardous act. The three causes of hazardous behavior are discussed: lack of training, lack of motivation, and creating an environment that does not fit the mental and physical capabilities of the employees. Hazardous behavior is analyzed by listing the antecedents that prompted the employee to perform the hazardous behavior and by listing the positive consequences to the employee by performing the hazardous behavior. The corresponding safe behavior is analyzed by stating the safe behavior alternative to the hazardous behavior in observable terms such that 2 of more independent observers would agree that the described safe behavior was or was not committed. New antecedents that would prompt the employee to perform the safe behavior rather than the hazardous behavior are developed. Finding new consequences to the safe behavior that will motivate the employees to perform the safe behavior are listed. Action plans to provide each of the new antecedents and to apply each of the consequences are drafted.

I. Safe Behavior Reinforcement (3 hours)

Performance discrepancies, defining safe behavior, creating generic and job specific critical behavior inventories including the measuring of safe behavior, baselines, intervention strategies including types of reinforcers, length of interventions, and reversal periods are presented. Safety sampling to measure percent safe behavior for determining the baseline and safety program effectiveness is taught.

J. Training to Prevent Hazardous Behavior (5 hours)

Training methods to prevent hazardous behavior caused by lack of training are presented. These cover conducting performance analyses, writing behavioral objectives, exploring appropriate teaching methods to meet the objectives, and writing lesson plans.

K. Loss Incident Costs (3 hours)

Costs involving medical and workers compensation payments, facility and equipment rental and replacement, labor to repair, replace or clean up of pollution, product damage, government fines, legal fees and settlements are taught. Cost involving the occurrence of hazards is presented also. Costing rates are used to calculate production downtime, overtime, and productive work lost costs. Cause and cost data collection procedures for injuries, illnesses, facility and equipment damage, product damage, environmental pollution, near loss incidents, and hazardous conditions are presented. The costs and causes are used in teaching cost/benefit analysis.

L. Safety Program Evaluation (3 hours)

Calculation of OSHA and MSHA injury rates is taught along with the safe-t-score technique to determine statistically significant changes in the rates. Criteria from accident experience, causal data, and accident prevention efforts are used to measure program effectiveness.

M. Management Performance Evaluation (2 hours)

Data from loss incident experience, hazardous behavior and conditions, and loss incident prevention efforts are used to measure individual managers for accountability purposes. Such data as incident frequency and severity, timeliness and completeness of loss incident investigations, follow through of corrective action and departmental hazard prevention procedure development and use are used in measuring accountability.

N. The Risk Management Process (3 hours)

The following subjects are covered: defining risk management, contributing factors for risk, types of risk, probabilities for risk, risk assessment, laws of acceptable risk, residual risk, and perceived risk. The risk assessment steps of hazard identification, dose response assessment, exposure assessment and risk characterization are covered. Steps in the risk management process and identifying and analyzing loss exposure are also covered.

O. Role of Insurance (3 hours)

Presented are the definition and history of insurance, discussion of the insurance mechanism, the various types of insurance, the classification of insurers, insurance

brokers, functions of insurance companies, rating bureaus, workers compensation insurance, insurance rating, and litigating workers compensation claims.

P. Establishing a Risk Management Program (3 hours)

Goals for the risk management program and organizing and controlling a risk management program are covered. Methods for planning, organizing, leading and controlling activities to minimize adverse effects of accidental losses at a reasonable cost are taught. The practice of weighting different hazard control strategies and selecting the most appropriate degree of control are presented.

Title of Laboratory Exercises	# of Hours	Lecture Units Covered
Defining a System for Analysis	3	A,B,C
Developing a Policy	3	D
Assessing Hazard Prevention Program Needs	3	E
Developing Programs	3	E
Assessing Programs via TQM Analysis	3	F
Analyzing Hazardous Conditions	3	G
Analyzing Hazardous Behavior	3	H
Reinforcing Safe Behavior	3	I
Devising Training Programs	3	J
Creating Training Devices and Sessions	3	J
Analyzing Decisions via Cost/Benefit	3	K
Evaluating Safety Programs	3	L
Measuring Management Accountability	3	M
Evaluating Risk Control Strategies	3	N,O,P

IV. Evaluation Methods

The faculty person assigned to teach this course could be one of several faculty within the Safety Sciences Department. What follows is an example of the evaluation methods and weighting used by one of those faculty members.

30% Exams: There will be written exams consisting of combinations of multiple choice, true/false, matching, completion, and essay questions; or other interactive exams. Make-up exams are at the discretion of the individual faculty member.

10% Quizzes: Periodic quizzes will be given. Unannounced quizzes may be used. Make-up quizzes are at the discretion of the individual faculty member.

5% Homework: Periodic out-of-classroom assignments will be given.

10% Term Papers/Projects: Each student will prepare formal papers or projects on a topic approved by the individual faculty member.

5% In-class Writing: Each student will prepare various assignments in class utilizing free-style writing techniques as scheduled by the individual faculty member.

10% Presentations: Each student will present orally a topic approval by the individual faculty member.

5% Class Participation: Each student will actively participate in classroom activities.

25% Laboratory Exercises: Laboratory exercises are a regular requirement of this course. Students will complete fourteen (14) laboratory exercises, each of which is described, discussed, interpreted, and reported in a formal technical report.

Extra credit may be assigned to any one or more of the above evaluation methods at the discretion of the instructor.

The grading scale is as follows:

A	90%-100%
B	80%-89%
C	70%-79%
D	60%-69%
F	< 60%

At the discretion of the faculty member, a grading curve that results in appropriate distribution of grades may be used in place of the scale described above.

V. Required Textbooks, Supplemental Books and Readings

Required and supplemental readings will come from the following list:

Pope, William C. Managing for Performance Perfection: The Changing Emphasis. Weaverville, NC: Bonnie Brae, 1990.

Lack, Richard (ed). Essentials of Safety and Health Management. Boca Raton, FL: CRC Press, 1996.

VI. Special Resource Requirements

None

VII. Bibliography

Brassand, Michael. The Memory Jogger Plus: Featuring the Seven Management and Planning Tools. Methuen, MA: GOAL/QPC, 1989.

Coyle, Ian R., et al. "Safety Climate," Journal of Safety Research. Vol 26, No. 4, 1995.

Krause, Thomas R., et al. The Behavior-based Safety Process: Managing Involvement for an Injury-free Culture. New York: Van Nostrand Reinhold, 1990.

Geller, E. Scott, et al. Behavior Analysis Training for Occupational Safety. Newport, VA: Make-A-Difference, Inc., 1989. (also companion Workbook and Discussion Workbook)

Mager, Robert F. and Peter Pipe. Analyzing Performance Problems: Or You Really Oughta Wanna. 3rd ed. Belmont, CA: Lake Publishing, 1993.

Manuele, Fred A. "Guidelines: Designing for Safety," A technical paper from Marsh & McLennan M&M Protection Consultants, 1995.

Peterson, Dan. Safe Behavior Reinforcement. Goshen, NY: Aloray, 1989.

Pierce, F. David. Total Quality for Safety and Health Professionals. Rockville, MD: Government Institute, Inc., 1995.

Samson, Thomas M. and Brian O. Hurt. "Managing Health and Safety Data." Occupational Health and Safety. December, 1995.

VIII. Historical Bibliographies

Chekanski, R. Philip. "A Loss Control Information System: Techniques for Its Implementation," Occupational Hazards – Focus Section: Journal of the National Safety Management Society, April 1974.

Nolden, Carol. "The Work Order System: Key to Effective Maintenance Management," Plant Engineering, October 13, 1983.

Police, Jacquelyn Marie. "The 'Systems' Approach in Accident Reporting," Occupational Hazards – Focus Section: Journal of the National Safety Management Society, June 1979.

Wright, R. Loss Management: International Management Audit System and LOMIS Incident Report Code Manual. Toronto: Gulf Oil of Canada, Ltd.,

Appendix C: Catalog Description

SAFE 412 Hazard Prevention Management

(3c-31-4cr)

Prerequisites: MATH 217 and MGMT 311

Examine various safety management techniques to identify and prevent the occurrence of hazardous behavior and conditions. Develop methods capable of extracting accurate, meaningful data, methods of collecting, codifying and processing hazard and loss incident information, and utilizing data retrieval systems to be used in cost/benefit decision-making for hazard prevention, safety program and performance evaluation.