

2007 – 2008 ANNUAL REPORT

**GRADUATE SAFETY
TECHNOLOGY PROGRAM**

Division of Applied Science & Technology

College of Information Technology and Engineering

December 1, 2008

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Introduction

Marshall University's Graduate Program in Safety Technology has been in existence since 1973. There are approximately thirty-eight (38) students enrolled in this program throughout the areas of emphasis. Overall enrollment has increased by fourteen (14) students over last year. Approximately fifteen percent (15%) are female and ten percent (10%) are minorities.

The master's degree program in Safety is not accredited by the Accreditation Board for Engineering and Technology (ABET), however, much of the curriculum course content is devised on a dual graduate/undergraduate level with Marshall University's ABET accredited undergraduate program. Consequently, the technical content of the Masters Degree in Safety is derived from many of the same learning outcomes (program objectives) prescribed by ABET for undergraduate programs.

I. Assessment Activities

The objectives of the Occupational Safety graduate program at Marshall University are to prepare graduates who can do the following:

- A. Apply a broad educational background in mathematics, science, technology and management as Occupational Safety and Health Professionals in state, regional, national or international levels in industry, government or academia.
- B. Are critical thinker and anticipate, identify and evaluate hazardous conditions and practices, and implement effective hazard control strategies in such areas as accident prevention, safety management, occupational health, industrial hygiene, loss/risk control management, ergonomics and environmental health and safety.
- C. Are effective communicators and ethical leaders within the Occupational Safety and Health profession.
- D. Pursue life-long learning to effectively practice within a rapidly evolving continually changing and increasingly diverse global environment.

B. Program Outcomes

Graduate students obtaining an MS degree at Marshall University will be able to demonstrate the following:

1. Ability to apply basic scientific knowledge in the safety and health field.
2. Ability to analyze and interpret data pertinent to the safety and health field and to design and conduct experiments.
3. Ability to anticipate, identify and evaluate hazardous conditions and practices and to identify and solve applied science problems.
4. Ability to develop and implement hazard control methods, procedures, programs and system design.
5. Ability to function as part of multi-disciplinary teams
6. Understanding of ethical behaviors and professional responsibilities.
7. Ability to express thoughts effectively in oral and written communications
8. Broad education necessary to understand safety and health issues within a global and social context.
9. Recognition of the need for continuous life-long learning in chosen professional career.
10. Knowledge of current safety and health issues.
11. Ability to use the techniques, skills and modern scientific and technical tools necessary for professional practice and to demonstrate mastery of the field of safety and health.

II. Assessment Activities:

A. Assessment Measures (Tools)

Each course a student takes in order to fulfill the required 36 semester hours for a masters degree in the field assesses the students competencies with a variety of assessment measures. These measures might be a major examination on the cognitive materials required for mastery; or it might be writing a major paper for presentation at the end of the year; or some sort of team project to prepare a power point presentation or other showing the application of equipment. Additionally at the end of the students program, the student will either take a major comprehensive examination to assess their overall knowledge of the field, or if the student does a problem report in lieu of the comprehensive examination,

that is presented to the faculty. Appendix I is an attempt to try and form a rubric matched with the courses a student might take and the program outcomes.

B. Benchmarks – See appendix II

C. Results/Analysis – See appendix II. We now need to work on collecting data from the benchmarks and seeing how students perform. Most of the results will be successfully completing a specific project or examination on the subject with at least a 80% passing rate for graduate work.

D. Analysis/Planned Action

The program is going to suspend the areas of emphasis in Ergonomics and Industrial Hygiene due to the fact that the majority of students gravitate toward the Occupational Safety and Health area. This will allow us to schedule better to meet students needs and not spread the faculty so thin trying to offer too many courses. We can also work on student recruitment more effectively.

Nothing will be done to the area of emphasis in Mine Safety. If and when more interest is shown in these other areas or CITE gets the new engineering building and we might have the room and lab space then these areas of emphasis will be reinstated.

Appendix II Performance Criteria

At the end of the course, the student will be able to do the following:

| Objectives | Benchmark |
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| 1. Given a piece of machinery, the student will be able to apply safety engineering principles to the evaluation of a specific machine guarding situation.(SFT 645) | Shown a piece of machinery, student will be able to verbally or written describe both the problem they see and solutions by applying engineering principles |
| 2. Utilize problem solving skills to propose a solution to the specific machine guarding problem that meet all regulatory standards and safety engineering principles. (SFT 645) | Given a piece of machinery, student will demonstrate knowledge of specific machine guarding problems and be able to cite specific federal regulations. |
| 3. The student will be able to explain how history has played a part in accident prevention. (SFT 540) | Student will be able to write about several specific fires that have occurred in history and the effects these fires have had on the legislative process |
| 4. The student will be able to evaluate measurements of safety performance utilizing a safety management simulation game entitled “The Huntington Toaster Company”. (SFT 599) | Successfully performing the specific requirements of the simulation will test the students understanding of management problems |
| 5. The student will be able to evaluate Safety & Health Program Management techniques through interview evaluations with employees in the Safety Simulation Game entitled “The Huntington Toaster Company”. (SFT 599) | Successfully utilizing the interviewing techniques and evaluations within the simulation will test the students understanding. |
| 6. The student will be able to utilize problem solving skills to evaluate life safety features in a building structure and provide a report detailing deficiencies identified. (SFT 540) | Given a scenario about a specific building, student will be able to solve the problem and cite correct building codes and write a report on findings |
| 7. The student will be able to apply fire prevention and protection principles to the evaluation of a building structure and complete a comprehensive fire inspection report of their findings. (SFT 540) | Given a specific building type the student will write about fire protection principles and be able to conduct and write a successful fire inspection report |
| 8. The student will be able to apply ergonomic design principles to workplace problems. (SFT 660) | Given a common workplace problem/scenario the student will apply design principles to redesign the workspace |
| 9. The student will be able to use ergonomic assessment methods to solve ergonomic problems. (SFT 660) | Given ergonomic problems, student will describe on a written examination how to solve the problem. |

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| <p>10. The student will be able to prepare a report on an ergonomic problem using standard technical writing format. (SFT 660)</p> <p>11. The student will be able to prepare a minimum of 4 laboratory field reports that outline the problems, methods, data collection, results and analysis and a redesign to reduce ergonomic stresses. (SFT 660 & SFT 554)</p> <p>12. The student will be able to successfully research a safety & health related legal decision and provide a summary report. (ES 660)</p> <p>13. The student will understand the basic psychological factors that cause people to be involved in accidents. (SFT 610)</p> <p>14. The student will be able to explain the ethical standards of the profession. (SFT 610)</p> <p>15. The student will be able to successfully complete a competency mathematical examination testing their ability to apply trigonometry and algebraic formulas to solving of safety engineering problems. (SFT 645)</p> <p>16. Student will be able to research and report on current occupational safety topics. (SFT 630)</p> <p>17. Student will be able to use problem solving skills to develop Industrial Hygiene solutions given a problem and be able to select proper equipment to perform tests. (SFT 554)</p> <p>18. Student will be able to demonstrate proper set up of IH equipment and explain the functioning of various pieces of equipment. (SFT 554)</p> <p>19. Given analytical test data from IH sampling, student will be able to understand what the data implies and formulate a proper defense strategy. (SFT554)</p> | <p>The student will develop report writing skills.</p> <p>Given actual field experiences to use test equipment under specific circumstances, the student will be able to write a comprehensive, detailed field report on the findings.</p> <p>Given a specific topic, student will be able to find/research that topic on Internet. Will also be able to explain specifically in either written or oral form what the legal implications of the topic might be.</p> <p>Student will be able to list the main psychological reasons people have accidents on a written examination.</p> <p>Given the ethical standards of the discipline and after discussion of said standards, student will be able to list the standards on an examination. Also given ethical scenarios, students will be able to discuss/describe solutions.</p> <p>Given specific mathematical problems pertaining to the subject, student will be able to successful pass a written examination.</p> <p>Student will be able to discuss the ramifications of specific safety topics and locate various reports on same.</p> <p>Students will have hands on experience in learning how to select, set up and calibrate specific pieces of industrial hygiene equipment. Student will be able to apply knowledge learned in using equipment to take samples of air, dust, noise. Student will be able to interpret the data that comes back from the testing agencies and then be able to apply standard techniques in carrying out abatement solutions to the perceived problem. This may be done in written reports, orally or a demonstration of proper equipment operation techniques.</p> |
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