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A PRELIMINARY SURVEY OF RISK AND SAFETY OPERATIONS AT SELECTED --ETC(U)

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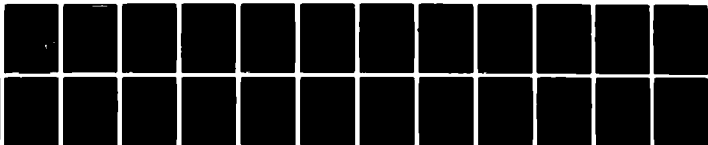
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A PRELIMINARY SURVEY OF RISK AND SAFETY OPERATIONS  
AT SELECTED UNIVERSITIES

Steven L. Salem and Kenneth A. Solomon

April 1982

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## I. INTRODUCTION

The objective of this brief paper is to provide some basis for identifying colleges and universities that offer courses in the fields of risk and safety. We intend this preliminary survey to be useful to both the student contemplating a career in safety and to the safety professional. We hope that the exchange is two way; not only will the student and the professional learn what is being offered or not being offered, but he or she could also influence those courses being offered and perhaps suggest new course content.

While our survey is too preliminary to identify holes in the curricula, it does suggest a number of trends.

- o During the past couple of years there has been a significant increase in the number of safety courses offered.
- o Safety courses are offered by not only the technical colleges such as engineering, but also by the business schools and the public policy schools.
- o The courses span a very wide range of interests and applications from teaching the technical person how to estimate risk to demonstrating the relation between the insurance industry and safety issues.
- o Some schools seem to specialize -- concentrating on fire safety or insurance or public policy or technological risk.

In this survey we examined a number of major colleges and universities to categorize the types of courses given in the general

fields of risk and safety. We have examined the course catalogs of a large number of colleges, selected at random based mainly on the ready availability of catalogs at Rand, and on microfiches available elsewhere. As a result, we can categorize the general types of courses given into the following:

- o Nuclear Engineering and Science: Risk, safety, radiation protection, licensing, siting, reliability, and so on.
- o General risk, safety and reliability; systems safety.
- o Risk and regulation.
- o Human factors engineering.
- o Health and safety.
- o Industrial safety, fire protection, industrial process hazards, etc.
- o Toxicological hazards.
- o Civil engineering: Structural safety, seismic safety, etc.
- o Environmental Science: Air, water and noise pollution.
- o Business Administration/Insurance/Law: Risk, liability and insurance.

In addition, there are many other related fields which we have not attempted to survey. For example, we have not considered seismic safety-related courses taught in the geologic sciences, nor courses taught in medical schools or departments. Within the range of specialties which we have examined, however, we can distinguish several opposing pairings of categories. For example, risk and safety courses, in general, are differentiated between hazards analysis on the one hand, and safety

practices and design on the other. Other dimorphisms include occupational risks (generally industrial safety), and general population risks (often environmental risks).

The remainder of this very introductory paper is divided into three sections. First we present those schools which offer degrees in risk and safety-related fields. Then, in the following section, we tabulate courses from a number of selected schools which do not offer specific degrees in risk and safety. However, in the time since we began this survey one school originally included in Section III has begun to offer such degrees. Thus, it is possible that others may also, in the near future, begin granting degrees in some of these areas. And, finally, in Section IV we select one school and describe in some detail those safety related courses that are offered. We think that in this brief survey it would be impracticable to detail those courses offered in each of these schools. We would encourage the interested reader to refer to the appropriate catalogs.

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## II. DEGREES IN RISK AND SAFETY-RELATED FIELDS

Table 1 lists those schools having degree programs in risk and safety related fields (Bluebook No. 17, and specific college catalogs). This listing includes not only major universities, but local colleges and technical schools as well. The degrees included are Certificate (C), Associate (A), Bachelors (B), Masters (M), Doctorate (D), and Other (O). A program consists of at least six courses in a focused discipline and at minimum leading to a certification but often leading to one or more degrees. The interested reader is encouraged to consult the appropriate catalog for detailed information.

This listing is not complete. We examine only a limited number of college and university catalogs, and we identify only a limited number of those courses offered. We did not gather a sufficient enough data base to arrive at any statistical inferences regarding the depth and breadth of courses that are offered.

In spite of the limited nature of our survey, we find an array of useful information.

During the past couple of years there has been a significant increase in the number of safety courses offered. Even during the course of this survey we identified one college who considerably increased its offerings in risk and safety fields. There is a growing trend to not only offer such courses, but also to offer specialties or degreed programs.

Safety courses are in no way limited to the technical schools and programs. Courses in risk and public policy, risk impact in insurance,

and risk management emphasize the nontechnical applications of risk analysis. Some of these nontechnical courses are just beginning to integrate technical expertise into their format. The converse -- technical courses introducing policy relevant format -- is somewhat less common but seems likely to emerge in the near future.

The technical courses emphasize application; that is to say, they estimate the risk of a one or a group of technologies. The social science type courses emphasize the relationship of technology to society.

Some schools seem to specialize -- concentrating on fire safety or insurance or public policy or technological risk. And, a number of schools seem to have very established programs. This is typically true of those schools offering the doctoral degree.

Table 1

RISK AND SAFETY DEGREE PROGRAMS IN U.S. SCHOOLS

---

ENVIRONMENTAL AND INDUSTRIAL HEALTH

(M) University of Michigan

ENVIRONMENTAL AND PUBLIC HEALTH

(A) Vincennes University, Indiana

(B) University of Wisconsin, Eau Claire

HEALTH AND SAFETY

(B/M) California State University, Sacramento

(B) Southern University and Agricultural and  
Mechanical College, Louisiana

(M) Indiana State University

INDUSTRIAL SAFETY

(B) University of Dubuque, Iowa

(A) Henry Ford City College, Michigan

(B) Texas A & M

INDUSTRIAL SAFETY AND HEALTH TECHNOLOGY

(A) Cleveland County Technical Institute, N.C.

(A) Rowan Technical Institute, North Carolina

(A) Chesterfield-Marlboro Technical College, S.C.

RISK AND INSURANCE

(B) Michigan State University

RISK AND SAFETY MANAGEMENT

(A) North Central Technical College, Ohio

RISK MANAGEMENT AND INSURANCE

(B/M) Florida State University

(B) University of Georgia

(B) Syracuse University

(B/M/D) University of Wisconsin, Madison

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Table 1 (Cont.)

RISK AND SAFETY DEGREE PROGRAMS IN U.S. SCHOOLS

---

|                                                   |         |                                                |
|---------------------------------------------------|---------|------------------------------------------------|
| SAFETY                                            | (M)     | University of Wisconsin, Stout                 |
| SAFETY AND FIRE PROTECTION ENGINEERING TECHNOLOGY | (B)     | Cogswell College, California                   |
| SAFETY AND TRAFFIC                                | (B)     | University of Wisconsin, Platteville           |
| SAFETY COORDINATOR                                | (C)     | Triton College, Illinois                       |
| SAFETY EDUCATION                                  | (B/M)   | University of Southern California              |
|                                                   | (B/M)   | Central Missouri State University              |
|                                                   | (M/D)   | New York University                            |
|                                                   | (B)     | Central State University, Oklahoma             |
|                                                   | (B)     | Shepherd College, West Virginia                |
|                                                   | (M/D)   | West Virginia University                       |
|                                                   | (B)     | University of Wisconsin, Whitewater            |
| SAFETY EDUCATION AND SERVICE                      | (M/D/O) | University of Tennessee, Knoxville             |
| SAFETY ENGINEERING                                | (B/M)   | Texas A & M                                    |
| SAFETY ENGINEERING TECHNOLOGY                     | (A)     | Cogswell College, California                   |
| SAFETY MANAGEMENT                                 | (A)     | Vincennes University, Indiana                  |
|                                                   | (A)     | Detroit College of Business                    |
|                                                   | (A)     | Cincinnati Technical College                   |
| SAFETY TECHNOLOGY                                 | (A)     | Indiana University, Bloomington                |
|                                                   | (A/B)   | Fairmont State College, West Virginia          |
|                                                   | (A)     | Waukesha County Technical Institute, Wisconsin |

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### III. SPECIFIC RISK AND SAFETY COURSES

In this section we present a list of courses from selected schools and universities which do not specifically offer degree programs related to risk and safety. These range from a single course (with many schools offering none at all), to a variety of courses in several departments. Again, we point out that not all departments or schools within large universities were investigated. Those which we did survey include engineering and technical departments, business administration, management, and health and environmental sciences. We did not include the physical sciences, medicine, or social sciences in general. These courses, taken from the most recent catalogs from 17 randomly selected schools, are presented in Table 2.

Some courses are not devoted entirely to safety, others are.

Table 2

SELECTED RISK AND SAFETY COURSES

| School                                                | Course                                         | Title                                                                |
|-------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------|
| ARIZONA STATE UNIVERSITY                              |                                                |                                                                      |
| College of Architecture:                              | Environmental Analysis and Planning<br>ANP 431 | Programming for Public Health and Safety                             |
| -----                                                 |                                                |                                                                      |
| CORNELL                                               |                                                |                                                                      |
| School of Engineering                                 | A&EP 304                                       | Introduction to Nuclear Science<br>and Engineering II                |
|                                                       | A&EP 634                                       | Nuclear Engineering Design Sem                                       |
| -----                                                 |                                                |                                                                      |
| DUKE UNIVERSITY                                       |                                                |                                                                      |
| Center for Resource and Environmental Policy Research | FES:383.01                                     | Environmental Perspectives: Risks,<br>Rights and Regulations         |
| -----                                                 |                                                |                                                                      |
| GEORGE WASHINGTON UNIVERSITY                          |                                                |                                                                      |
| Department of Statistics                              |                                                | Risk Analysis                                                        |
| Continuing Engineering Education                      |                                                | Reliability and Risk Analysis                                        |
| -----                                                 |                                                |                                                                      |
| HARVARD                                               |                                                |                                                                      |
| School of Public Health:                              |                                                |                                                                      |
| Environmental Health                                  | EHI 201                                        | Principles of Environmental Health                                   |
|                                                       | EHI 204                                        | Human Factors in Occupational<br>Performance and Safety              |
|                                                       | EHI 205                                        | Current Topics in Occupational<br>Health and Safety                  |
|                                                       | EHI 213                                        | Occupational Safety Science                                          |
| Env. Health Sciences                                  | EHS 255                                        | Health Hazards of Manufacturing Processes                            |
|                                                       | EHS 271                                        | Introduction to Radiation Protection                                 |
|                                                       | EHS 273                                        | Advanced Topics in Radiation Protection                              |
| Engineering                                           | ENG 282                                        | Basic Problems in Occupational Health<br>and Industrial Environments |
|                                                       | ENG 284                                        | Community Air Pollution                                              |
| -----                                                 |                                                |                                                                      |
| LOUISIANA STATE UNIVERSITY                            |                                                |                                                                      |
| Business Administration                               | BA 3440                                        | Risk and Insurance                                                   |
|                                                       | BA 7417                                        | Concepts in Risk and Insurance                                       |
| -----                                                 |                                                |                                                                      |
| NATIONAL INSTITUTE OF HEALTH                          |                                                |                                                                      |
|                                                       | TOXI 517M                                      | Survey of Toxicologic Risk Assessment<br>Methodologies               |
| -----                                                 |                                                |                                                                      |

Table 2 (Cont.)

SELECTED RISK AND SAFETY COURSES

| School                                         | Course     | Title                                    |
|------------------------------------------------|------------|------------------------------------------|
| <b>NORTHWESTERN UNIVERSITY</b>                 |            |                                          |
| Civil Engineering                              | 720-C06    | Uncertainty Analysis                     |
|                                                | 720-C07    | Earthquake Analysis and Risk Engineering |
|                                                | 720-C60    | Environmental Impact Evaluation          |
|                                                | 720-C61    | Public Health Engineering                |
|                                                | 720-C63    | Community Air Pollution                  |
|                                                | 720-C65    | Radiological Health                      |
| Industrial Engineering and Management Sciences | 738-C21    | Human Factors Engineering                |
|                                                |            |                                          |
| Mechanical and Nuclear Engineering             | 740-C57    | Alternative Energy Sources               |
|                                                | 740-D07    | Nuclear Power Reactor Safety             |
|                                                |            |                                          |
| <b>PURDUE</b>                                  |            |                                          |
| Industrial Engineering                         | IE 558     | Safety Engineering                       |
| Mechanical Engineering                         | ME 428     | Sources and Control of Air Pollution     |
| Nuclear Engineering                            | NE 402     | Engineering of Nuclear Power Systems     |
| <b>RENSSELAER</b>                              |            |                                          |
| Civil Engineering                              | CE 33649   | Earthquake Engineering                   |
|                                                | CE 33658   | Geostochastics                           |
| Nuclear Engineering                            | NE 38632   | Safety Controls for Nuclear Operations   |
|                                                | NE 38633   | Nuclear Reactor Reliability              |
| Management                                     | M 83646    | Quantitative Analysis of Health Systems  |
| <b>STANFORD</b>                                |            |                                          |
| Mechanical Engineering                         | ME 115A    | Human Values in Design                   |
|                                                | ME 137     | Air Pollution                            |
|                                                | ME 138     | Noise Pollution                          |
|                                                | ME 180     | Energy and Society                       |
| Operations Research                            | OR 355     | Reliability Theory                       |
| <b>STEVENS INSTITUTE OF TECHNOLOGY</b>         |            |                                          |
| Civil Engineering                              | CE 145     | Env. Impact Analysis and Planning        |
| Management Science                             | MS 137/138 | Human Factors in System Design           |
| Mechanical Engineering                         | ME 141     | Air Pollution Control                    |

Table 2 (Cont.)

SELECTED RISK AND SAFETY COURSES

| School                                                     | Course              | Title                                               |
|------------------------------------------------------------|---------------------|-----------------------------------------------------|
| UNIVERSITY OF CALIFORNIA, LOS ANGELES                      |                     |                                                     |
| Engineering and Applied Science                            |                     |                                                     |
|                                                            | ENG 236C            | Thermal Reactor Safety                              |
|                                                            | ENG 236D            | Fast Reactor Safety                                 |
|                                                            | ENG 236H            | Probabilistic Risk Assessment                       |
|                                                            | ENG 267E            | Structural Loads and Safety for<br>Civil Structures |
|                                                            | ENG 268B            | Failure of Structural Systems                       |
| -----                                                      |                     |                                                     |
| UNIVERSITY OF MARYLAND                                     |                     |                                                     |
| Center for Philosophy and Public Policy                    |                     |                                                     |
|                                                            | PHIL 408L/GUPT 479F | An Analysis of Risk                                 |
| -----                                                      |                     |                                                     |
| UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL                |                     |                                                     |
| Business Administration BA 120 Risk Management             |                     |                                                     |
| Environmental Sciences and Engineering                     |                     |                                                     |
|                                                            | ES&E 51             | Environmental Protection                            |
|                                                            | ES&E 133            | Environmental Health and the<br>Aquatic Environment |
|                                                            | ES&E 141            | Elements of Air Hygiene                             |
|                                                            | ES&E 142            | Elements of Industrial Hygiene                      |
|                                                            | ES&E 161            | Elements of Radiological Hygiene                    |
| -----                                                      |                     |                                                     |
| UNIVERSITY OF WISCONSIN, MILWAUKEE                         |                     |                                                     |
| Engineering-Mechanics 420 Environmental Health Engineering |                     |                                                     |
| Systems Design 482 Environmental Policy Analysis           |                     |                                                     |
| -----                                                      |                     |                                                     |
| WASHINGTON UNIVERSITY, ST. LOUIS                           |                     |                                                     |
| Technology and Human Affairs                               |                     |                                                     |
|                                                            | THA 142             | Technology and Health Care Policy                   |
|                                                            | THA 262             | Pollution and Environmental Impact                  |
|                                                            | THA 512             | Technology Assessment and Public Policy             |
|                                                            | THA 532             | Technology and Environmental Management             |
| -----                                                      |                     |                                                     |

IV. A DETAILED LOOK AT COURSES IN ONE SCHOOL

While we feel it would be highly impracticable to provide a detailed course description of each of the colleges and universities we looked at, let alone all of those out there, we feel that it might be useful to describe in some detail the types of courses offered within one department of one university. For this representative task we selected the Department of Health and Safety at Indiana University.

This department has a faculty of ten professors and offers a Bachelor of Science, a Master of Science, and a Master of Arts degree in Health and Safety. The broad aim of this Department is to teach academic and skill preparation of certain health science and safety professionals who are usually employed as educators, supervisors, coordinators, and administrators in schools, colleges, industries, and private government agencies.

The Bachelor of Science Degree in Community Health Education requires 62 semester hours and in Environmental Health Sciences requires 72 semester hours. A minimum of 18 semester hours is required for either the M.A. or the M.S. degrees.

Table 3

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                           |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 111           | PERSONAL HEALTH SCIENCE--3 hours. Acquaints students with correct scientific information and data on matters of health which they and other members of society will encounter during their lives.                                                                                               |
| 209           | SURVEY OF CURRENT ENVIRONMENTAL HEALTH PROBLEMS--3 hours. Underlying causes and current status of health problems as they relate to the environment of man.                                                                                                                                     |
| 211           | ADVANCED FIRST-AID AND EMERGENCY CARE--2 hours. Intensive study of very practical bodies of knowledge and skills in first-aid and emergency medical care to better qualify an individual to cope with common daily emergencies.                                                                 |
| 212           | ENVIRONMENTAL SAFETY--3 hours. Study and evaluate significant concepts of modern ecology in searching into the nature of things related to environmental safety. The course is designed to cause students to question, analyze, generalize, and project safety into today's environment.        |
| 221           | COMMUNITY HEALTH--3 hours. Community health problems and the community health movement at local, state, federal, and international levels.                                                                                                                                                      |
| 310           | PRINCIPLES AND PRACTICES OF ENVIRONMENTAL HEALTH I--4 hours. History, philosophy, and principles of general public health sanitation. Lectures, demonstrations, discussions, and visitations to enable familiarization with municipal, rural, commercial, and industrial sanitary practice.     |
| 311           | FIRST-AID FOR INSTRUCTORS' CERTIFICATION--2 hours. Advanced consideration of first-aid subject matter, including instructional methods, techniques, and resources. Service as a teaching associate is required. Prerequisite: 211 or possession of standard and advanced first-aid certificate. |
| 313           | SCHOOL HEALTH EDUCATION--3 hours. The field of health science instruction as a subject of public school curricula. Includes essential preparation of the health science educator.                                                                                                               |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                                       |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 314           | SAFETY METHODS--3 hours. The course is designed to stimulate the student's ability and techniques in developing logical, practical, and economic practices in industrial plant safety programs.                                                                                                             |
| 315           | INDUSTRIAL HYGIENE I--4 hours. A qualitative and quantitative study of man's working environment and the methods by which that environment is maintained in an acceptable level of hygiene.                                                                                                                 |
| 316           | PRINCIPLES AND PRACTICES OF ENVIRONMENTAL HEALTH II--4 hours. Systems concept as well as selected systematic procedures relating to environmental health programs, including program planning and evaluation of environmental health operations.                                                            |
| 317           | EPIDEMIOLOGY--3 hours. Epidemiology is the study of the etiological agents, reservoirs, vectors, cultural, geographic factors, etc., determining the occurrence of disease in a population; the natural history of disease and its control; and the study of the variables of disease: time, place, person. |
| 318           | OCCUPATIONAL SAFETY--3 hours. Current emphasis and trends in safety and accident prevention programs being promoted in connection with various types of service and production activities. Includes visitations for purpose of surveying actual safety programs in action.                                  |
| 319           | INDUSTRIAL ACCIDENT PREVENTION--3 hours. A study of safety methods and practices as applied to public and industrial programs.                                                                                                                                                                              |
| 320           | HEALTH ASPECTS OF HUMAN ECOLOGY--3 hours. Study of the ecological forces which influence man's health both quantitatively and qualitatively, and how man adapts to his environment in order to assure survival.                                                                                             |
| 323           | INTRODUCTION TO GENERAL SAFETY--3 hours. Designed to assist superintendents, principals, supervisors, teachers, students, school employees, and community leaders in planning and implementing safety education programs.                                                                                   |
| 324           | PUBLIC HEALTH CONTROL OF ENVIRONMENTAL POLLUTANTS--3 hours. Public health principles regarding surveillance and monitoring procedures dealing with environmental pollutants. Prerequisites: 221, 310, Life Sciences 101, Chemistry 103, 103L or special consent of the Department Chairperson.              |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                 |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 325           | TRAFFIC AND TRANSPORTATION SAFETY--3 hours. Considers the chief problems of traffic safety and the promotion of programs dealing with automotive forms of transportation, highway design, traffic control, and traffic legislation.   |
| 326           | ACCIDENT AND DISASTER CONTROL--2 hours. Major types of accident disaster situations and related preventive and remedial measures. Includes organizational features of control programs in schools, industries, and communities.       |
| 327           | SCHOOL HEALTH SERVICES--3 hours. Thorough consideration of services related to health of pupils, including basic services, health appraisal, health counseling, and follow-through aspects.                                           |
| 328           | FIRE PROTECTION AND HAZARDOUS MATERIALS SAFETY--3 hours. Designed for safety management professionals and students. Emphasis on methods and techniques related to fire protection, fire control, and handling of hazardous materials. |
| 392           | EDUCATIONAL METHODS FOR HEALTH AND SAFETY--2 hours. Methods, procedures, aids, devices, and material sources appropriate for use by the health and safety educator.                                                                   |
| 400A          | COGNITIVE FOUNDATIONS IN EDUCATION--SEMINAR I--3 hours. Designed to enable health educators to establish sound foundations in contemporary health science literature. Prerequisites: Life Sciences 231 241.                           |
| 400B          | COGNITIVE FOUNDATIONS IN HEALTH EDUCATION--SEMINAR II--3 hours. Designed to enable health educators to establish sound foundations in contemporary health science. Prerequisites: Life Sciences 231 and 241, HLSF 400A.               |
| 422           | CORPORATE SAFETY--3 hours. Safety management students will participate actively in studying the development and maintenance of current national-state safety standards in public and private organizations.                           |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 413           | EMERGENCY SAFETY SERVICES AND SECURITY--3 hours. The purpose of this course is to study methods of handling emergency safety problems and riot control in industry, communities, schools, institutions, etc.                                                                                                                                                                                       |
| 415A*         | DRIVER EDUCATION--3 hours. Designed to prepare teachers and administrators in methods, materials, and administrative techniques related to effective driver education in the schools. Prerequisite: 323 or current enrollment in same.                                                                                                                                                             |
| 415B*         | LABORATORY PROGRAMS IN DRIVER AND TRAFFIC SAFETY EDUCATION--3 hours. A technical examination of the aims, objectives, and role of laboratory programs in driver and traffic safety education.                                                                                                                                                                                                      |
| 416*          | ADMINISTRATION OF SAFETY PROGRAMS--3 hours. Organizational features and administrative guidelines and techniques relating to safety programs in schools, industries, and divisions of government.                                                                                                                                                                                                  |
| 417*          | COMMUNITY HEALTH AND SAFETY RESOURCES--2 hours. Structure and function of all resource agencies in the total community that contribute to human health and well-being approaches utilized in the coordination of programs and services.                                                                                                                                                            |
| 418           | SURVEY OF SAFETY RESEARCH AND EVALUATIVE TECHNIQUES--3 hours. Comprehensive investigation and review of research in the field of safety and accident prevention with emphasis on human and environmental factors.                                                                                                                                                                                  |
| 422           | PROFESSIONAL FIELD PRACTICE INTERNSHIP IN SAFETY MANAGEMENT--4 hours (per internship). Field work experience with organized safety programs of commercial, industrial, or governmental organizations. Credit may be earned on the basis of one hour for each four-week period of full-day service. Prerequisites: senior status; 211, 212, 314, 318, 319, 323, 325, 328, 413; Management 200, 400. |
| 423           | SAFETY SEMINAR PLANNING--3 hours. Each advanced safety management student will be doing original research and reports. All students will exchange reports through formal lectures, discussions, and handouts.                                                                                                                                                                                      |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                                                                 |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 425           | TOXICOLOGY--2 hours. Principles and theories of poisoning; the mode of action of toxic substances; physiological systems affecting mechanisms of occurrence; prevention, treatment, and analysis. Prerequisites: Chemistry 103, 103L; Life Sciences 231, 241.                                                                         |
| 425L.         | TOXICOLOGY--1 hour. Laboratory course for 425.                                                                                                                                                                                                                                                                                        |
| 426*          | HEALTH AND SAFETY SUPERVISION--2 hours. Supervisory methods, tools, and techniques designed to develop leadership qualities, to promote human relations, and to upgrade contributions of employee personnel involved in various types of health and safety programs.                                                                  |
| 427*          | SPECIAL SUBJECTS IN HEALTH AND SAFETY--1-4 hours. Application of basic principles and current processes of problem solving to health and safety matters. Procedures and approaches for the development of impact documents will be studied. May be repeated for a maximum of four hours.                                              |
| 428           | PUBLIC HEALTH EDUCATION--3 hours. Integration of public health principles, teaching procedures, understanding of behavioral characteristics of adults, and current health problems and health legislation in the educator's role as a community organizer, health planner, and in-service training consultant.                        |
| 435*          | DRIVER EDUCATION FOR THE HANDICAPPED--1-3 hours. Gives driver education instructors an opportunity to investigate problems relative to handicapped students and to develop appropriate curricula and teaching materials needed in the field of driver education and traffic safety for special education students.                    |
| 436*          | SEMINAR MOTORCYCLE SAFETY EDUCATION--3 hours. Provides an opportunity for administrators, driver education instructors, and interested students for exposure and discussion of current problems involving motorcycle education. Development of curricula and teaching materials.                                                      |
| 438           | TECHNICAL SEMINAR IN ENVIRONMENTAL HEALTH--2 hours. Concepts and methodologies for assessing the environmental consequences of technological development. Advanced techniques in analyzing and evaluating environmental health problems related to water, air, solid waste, shelter, food, and radiation. Professional preparation of |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | reports in the above problem areas. Procedures and approaches for the preparation of environmental impact statements will be considered as well as case studies at the state and national levels.                                                                                                                                                                                                                                                                                 |
| 439           | ADMINISTRATIVE SEMINAR IN ENVIRONMENTAL HEALTH--2 hours. A study by students of the application of basic principles and processes of problem solving to health problems.                                                                                                                                                                                                                                                                                                          |
| 440           | HEALTH BIOSTATISTICS--3 hours. Statistical methods in the study of human mortality, morbidity, and natality. Critical appraisal of census and vital data, measurement of risk, and introduction to life tables. Design of surveys in public health.                                                                                                                                                                                                                               |
| 444           | PUBLIC HEALTH ADMINISTRATION--3 hours. Public health administration and practice of personnel management; principles of organization, government, and law; public relations; expenditure of money; and the principles and political entities involved in fields related to public health.                                                                                                                                                                                         |
| 445*          | INNOVATIVE TEACHING TECHNIQUES FOR DRIVER AND TRAFFIC SAFETY--3 hours. Designed to prepare teachers to become competent in using simulation, radio communication, driving range, and program learning as integral parts of the high school driver and traffic safety education program.                                                                                                                                                                                           |
| 447           | PRACTICUM IN ENVIRONMENTAL HEALTH--3 hours. Environmental health laboratory experiences provided through field work, experiments, and evaluation and interpretation of data.                                                                                                                                                                                                                                                                                                      |
| 477L*         | PRACTICUM IN ENVIRONMENTAL HEALTH--3 hours. Laboratory course for 477.                                                                                                                                                                                                                                                                                                                                                                                                            |
| 490           | PROFESSIONAL FIELD PRACTICE INTERNSHIP IN ENVIRONMENTAL HEALTH--4 hours (per internship). Field work experience with functioning environmental health programs of commercial, industrial, or governmental organizations. Credit may be earned on the basis of one hour for each four-week period of full-day service. Prerequisites: senior status; 221, 310, 316, 317, 320, 326, 417, 440; Chemistry 103, 103L, 150, 150L; Mathematics 111; Life Sciences 274, 474; Physics 105. |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 491           | PROFESSIONAL FIELD PRACTICE INTERNSHIP IN COMMUNITY HEALTH EDUCATION --4 hours. Community health education field work in health agencies at local, state, or federal levels. Credit may be earned on the basis of one hour for each four-week period of full-day service. Prerequisites: senior status; 111, 221, 317, 392, 400A, 400B, 417, 426, 428; Home Economics 201; Chemistry 103, 103L; Life Sciences 231, 241, 274; Sociology 442. |
| 515A          | DRIVER EDUCATION--3 hours. Designed to prepare teachers and administrators in methods, materials, and administrative techniques related to effective driver education in the schools. Must be taken concurrently with 515B.                                                                                                                                                                                                                 |
| 515B          | LABORATORY PROGRAMS IN DRIVER AND TRAFFIC SAFETY EDUCATION--3 hours. A technical examination of the aims, objectives, and role of laboratory programs in driver and traffic safety education. A supervised student teaching experience. Must be taken concurrently with 515A.                                                                                                                                                               |
| 516           | ADMINISTRATION OF SAFETY PROGRAMS--3 hours. Organizational features and administrative guidelines and techniques relating to safety programs in schools, industries, and divisions of government.                                                                                                                                                                                                                                           |
| 517           | COMMUNITY HEALTH AND SAFETY RESOURCES--2 hours. Structure and function of all resource agencies in the total community that contribute to human health and well-being, plus approaches utilized in the coordination of programs and services.                                                                                                                                                                                               |
| 526           | HEALTH AND SAFETY SUPERVISION--2 hours. Supervisory methods, tools, and techniques designed to develop leadership qualities, to promote human relations, and to upgrade contributions of employee personnel.                                                                                                                                                                                                                                |
| 527           | SPECIAL SUBJECTS IN HEALTH AND SAFETY--1-4 hours. Application of basic principles and current processes of problem solving to health and safety matters. Procedures and approaches for the development of impact documents will be studied. May be repeated for maximum of 4 hours.                                                                                                                                                         |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 535           | DRIVER EDUCATION FOR THE HANDICAPED--1-3 hours. Gives driver education instructors an opportunity to investigate problems relative to handicapped students and to develop appropriate curricula and teaching materials needed in the field of driver education and traffic safety for special education students.                                                                                       |
| 536           | SEMINAR IN MOTORCYCLE SAFETY EDUCATION--3 hours. Provides an opportunity for administrators, driver education instructors, and interested students for exposure and discussion of current problems involving motorcycle safety education. Development of curricula and teaching materials.                                                                                                              |
| 545           | INNOVATIVE TEACHING TECHNIQUES FOR DRIVER AND TRAFFIC SAFETY--3 hours. Designed to prepare teachers to become competent in using simulation, radio communication, driving range, and program learning as integral parts of the high school driver and traffic safety education program.                                                                                                                 |
| 601           | RESEARCH IN HPER--3 hours. Various research methods and techniques as they apply to research in health and safety, physical education, recreation and leisure studies. Critical analysis of published research in health and safety, physical education, recreation and leisure studies.                                                                                                                |
| 602           | INDEPENDENT RESEARCH IN HPER--1-3 hours. Independent research on special projects as designed by the student and his or her adviser. Course may be repeated with a maximum of three hours credit.                                                                                                                                                                                                       |
| 603           | SPECIAL TOPICS FOR HPER--1-6 hours. Interdisciplinary studies which emphasize experiences in contemporary topics, problems, and/or research applicable to the disciplines of health, physical education, and recreation and leisure studies. (May be repeated with a change in course content for a maximum of 6 credit hours.) Prerequisite: major student in School of HPER or consent of instructor. |
| 605           | FOUNDATIONS AND TRENDS IN HPER--3 hours. History, principles, and trends in the fields of health, physical education, and recreation and leisure studies.                                                                                                                                                                                                                                               |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                                         |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 606           | PSYCHOLOGICAL IMPLICATIONS IN HPER--3 hours. Psychological aspects of physical activity in the fields of health, physical education, and recreation and leisure studies. Emphasis on the psychological, physiological, and sociological values of physical activity for the individual.                       |
| 607           | READING AND ANALYSIS OF PROFESSIONAL LITERATURE IN HPER--3 hours. Outstanding professional literature of health, physical education, recreation and leisure studies, and related fields with special emphasis on controversial issues. Designed for the advanced graduate students in HPER.                   |
| 609           | FACILITIES IN HPER--3 hours. Principles, nomenclature, standards for planning and construction, design, sites, equipment, costs analysis, and maintenance of facilities.                                                                                                                                      |
| 611           | HEALTH SCIENCE FOR ADULT LIVING--3 hours. Advanced level of study dealing with fundamental and predominating health problems of the adult years, emphasizing knowledge, attitudes, and practices related to healthful living.                                                                                 |
| 613           | SCHOOL HEALTH CURRICULUM--3 hours. Philosophy, principles, and practices dealing with health curriculum, course of study development, and review of pertinent research. Designed for school personnel of all levels.                                                                                          |
| 615           | CURRENT ISSUES IN DRIVER AND TRAFFIC SAFETY EDUCATION--3 hours. Investigate problems, research, curricula, teaching methods, and teaching material involving factors which are currently related to driver performance; emphasis may change each semester. May be repeated for a maximum of 6 hours.          |
| 619           | SEMINAR: PROBLEMS IN COMMUNITY HEALTH PROGRAM PLANNING, COORDINATION, AND OPERATIONAL RESEARCH--3 hours. Investigation of community health structure, organizations contributing to health care promotion, and problems involving interagency cooperation for improved coordination of services and programs. |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

| COURSE NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 620           | CRITICAL HEALTH ISSUES--3 hours. Designed for the professional educator and other personnel from allied fields. Professional experience in small and large group investigation and analysis of the critical issues confronting the health of mankind.                                                                                                    |
| 621           | SPECIAL TOPICS IN HEALTH, SAFETY, AND THE ENVIRONMENT--1-3 hours. Recent advances and research in school health education, safety management, community health education, and environmental health; emphasis may change each semester. May be repeated for a maximum of 6 hours.                                                                         |
| 623           | GENERAL SAFETY AND SAFETY EDUCATION--3 hours. Designed to provide an overview of the major safety problems of our times and to promote safety education in schools, social agencies, and the community.                                                                                                                                                  |
| 624           | ADMINISTRATION OF SCHOOL HEALTH PROGRAMS--3 hours. Total school health program including health services, healthful instruction, and healthful school living. Relationships of school and community in educating the individual for better health. Programs for elementary, junior high school, and senior high school levels are stressed.              |
| 625           | TRAFFIC SAFETY--3 hours. Traffic legislation, principles of highway design and traffic control, and automotive transportation problems. Also includes review of current traffic safety research. Prerequisites: General Safety and Driver Education or equivalents.                                                                                      |
| 627           | METHODS AND TECHNIQUES FOR COMMUNITY HEALTH PLANNING AND COORDINATION--3 hours. Designed for community health and allied personnel engaged in agency and organizational responsibilities at all levels, and for individuals planning to enter such work. Content ranges from data collection and program planning through resources and communications.  |
| 628           | PROGRAM EVALUATION IN HEALTH AND SAFETY--3 hours. Advanced techniques and methods of selecting, constructing, and utilizing instruments for evaluating all phases of health and safety programs, including development of evaluation reports. Actual practice in program evaluation is included. Prerequisites: 613, 624, or current enrollment in same. |

Table 3 (Cont.)

HEALTH AND SAFETY COURSES AT INDIANA UNIVERSITY

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| COURSE<br>NUMBER | TITLE AND DESCRIPTION                                                                                                                                                                                                                                                                                                                           |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 629              | FIELD RESEARCH PROJECT IN HEALTH OR SAFETY--3 hours. Comprehensive study and written report involving a specific problem related to health or safety education, supervision, or administration in which program and/or personnel functions are observed, analyzed, and reported. Prerequisite: 628 or consent of Chairperson of the Department. |
| 699              | MASTER'S THESIS--6 hours. Arranged with student's thesis committee.                                                                                                                                                                                                                                                                             |

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NOTE: Courses in the 500 series are open to undergraduate students as 400\* series. Graduate students are required to do additional work of a research nature.

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V. CONCLUSIONS

This brief survey is intended to help both the student seeking the appropriate school and industry trying to assist the academic community in their training of students. Because this survey is so brief, it is in no way intended to be complete. Rather it merely provides a shallow basis of information upon which the reader might build by locating the relevant catalogs.

In spite of the brevity of our survey, we did note several findings:

- o During the past couple of years there has been a significant increase in the number of safety courses offered.
- o *Safety courses are offered by not only the technical colleges such as engineering, but also by the business schools and the public policy schools.*
- o The courses span a very wide range of interests and applications from teaching the technical person how to estimate risk to demonstrating the relation between the insurance industry and safety issues.
- o Some schools seem to specialize -- concentrating on fire safety or insurance or public policy or technological risk.

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