

Health Science

The Bachelor of Science in Health Science and the Master of Public Health (MPH) are designed to prepare students for careers with official and voluntary health agencies at the federal, state, or local levels of government as well as the private sector.

The Master of Public Health degree is designed for individuals seeking a professional degree in public health. This degree is recognized throughout the world and is fully accredited by the Council of Education for Public Health (CEPH).

Bachelor of Science Degree

The Department of Health Science offers curricula based on principles of public health practices leading to a Bachelor of Science degree, including a major and minor in health science with options in community health, environmental health science/industrial hygiene, health administration, and occupational safety and health.

Today there is an increasing emphasis upon health, health problems, and the resolution of these problems by all levels of government and by the industrial and military segments of our society. People are concerned about their health, and a concerned nation is in need of educated, trained, and sensitive individuals to provide assistance and action — actions that cater to the physical, psychological, and social needs of our country and developing nations throughout the world.

Master's Program

The mission of the program is to prepare public health professionals for leadership roles in the fields of environmental/occupational health, health administration, and health promotion so that they may contribute to the process of improving the health of communities located within the San Joaquin Valley, California, and the southwest. This mission is fulfilled by attaining several program goals which address on a partnership basis the health needs of the ethnically and socioeconomically diverse populations living in the San Joaquin Valley and the southwest. Coursework for the M.P.H. degree is varied and designed to provide the maximum opportunity for problem-solving approaches to the complex issues in the operation, environment, and human factors confronting the health care systems.

Career Opportunities

The options are designed to provide basic education for careers in environmental health, industrial hygiene, community



health, occupational safety, public health, occupational health, and the allied health professions. Individuals may be employed by voluntary health agencies, hospitals, public health agencies, and in the private sector including industry and insurance companies. Career titles and specializations include: environmental control officer, risk control specialist, health industry sales, hazardous materials management, loss control specialist, health educator, safety and health specialist, health care administration, safety officer/manager, registered environmental health specialist, secondary teaching, university teaching, safety products sales, substance abuse, industrial hygienist, health promotion, environmental analyst, and disease control officer.

Faculty

Anthony M. Alcocer, *Interim Chair*

Community Health:

Gerald W. Davoli
Vicki D. Krenz
Miguel A. Perez
Helda L. Pinzon-Perez
Sherman K. Sowby, *Adviser*

Environmental Health Science/Industrial Hygiene: Sandra Donohue, *Adviser*;

Wayne N. Clark, Ronald C. Schultz,
Christopher J. Tennant

Health Administration Adviser:

Donald L. Matlosz

Occupational Safety and Health Adviser:

Michael J. Waite

Credential Adviser: Sherman K. Sowby

MPH Adviser: Gerald W. Davoli

Bachelor of Science in Health Science

The Health Science Bachelor of Science curriculum consists of a core of five courses providing a foundation of knowledge and skills critical to the theory and practice of the

College of Health
and Human Services

Department of Health Science

Anthony M. Alcocer, *Interim Chair*

Janice Rutherford, *Administrative
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<http://www.csufresno.edu/hlthsci>

B.S. in Health Science

Options:

- Community Health
- Environmental Health Science/
Industrial Hygiene
- Health Administration
- Occupational Safety and Health

Master of Public Health (MPH)

Options:

- Environmental and Occupational
Health
- Health Administration
- Health Promotion

Minor in Health Science

Certificate in Alcohol/Drug Studies

health professional. In addition, students complete a specialized cluster of courses in an option that provides the depth and breadth for the area. A variety of combinations between and within options is possible to meet professional goals. Some students choose to specialize in two or more areas of community health whereas others may meet the requirements for environmental health science/industrial hygiene and supplement this with occupational safety and health coursework. Still others may complete all requirements for two options such as environmental health science/industrial hygiene and occupational safety and health. However, university policy allows only one option to appear on the transcript and diploma.

To complete the health science major for the B.S., students must complete General Education requirements (51 units), the health science core (15 units), one of four options (21-27 units), and any additional requirements to the option selected (11-33

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units), the upper-division writing skills requirement, and additional electives. Students are encouraged to complete the additional requirements prior to the major courses as the courses may meet General Education requirements, and they provide a foundation for the courses in health science. Elective units also may be used toward earning a minor or certificate.

Health science students are advised to obtain the advising booklet from the department office. The booklet includes the list of required courses. It is strongly recommended that students follow the coursework shown in the booklet. Students need to consult with their advisers for decisions regarding major and minor courses. All substitutions must be approved by the department chair. Classes offered in the Health Science Department may require field assignments.

Bachelor of Science Degree Requirements

<i>Health Science Major</i>	<i>Units</i>
Health Science Core	15
HS 92, 100, 109, 161, 163	
Options	38-54
Select one option from below.	
General Education requirements	51
Electives	0-14
Total	120*

*This total indicates that 9 units for BIOSC 1A, CHEM 1A or PHYS 2A, and DS 71 are used to satisfy the G.E. requirement in the Environmental Health/Science Industrial Hygiene Option.

The curriculum is designed to permit admission to master's and doctoral degree programs in health science at major universities throughout the country.

Community Health Option

Due to the increasing number of opportunities in the area of health, we have structured courses in personal, community, environmental, and international health to complement basic courses in safety, first aid, disease, drugs, and human sexuality. The curriculum is designed to prepare individuals not only to be competent instructors in the health areas, but to be health educators in many segments of our society. Upon completion of the degree, students would be eligible to take the certified test to become a Certified Health Education Specialist (CHES).

Industry, business, labor, and the military all seek knowledgeable individuals to plan and direct health delivery and information services. Advanced study in health systems and evaluation techniques of health systems is available to qualified undergraduate and graduate students.

Community Health Option Units

Requirements	27
Option requirements:	
HS 90, 91, 110, 114, 131, 133, 135	(21)
Option elective requirements (select from): HS 48, 104, 105, 111, 112, 115, 126, 129, 130, 152T, 182; NUTR 53, 54	
	(6)
Additional requirements	15
BIOL 10 or 110; CHEM 3A, 3B; PHYAN 33	
Total for option	42

Environmental Health Science/Industrial Hygiene Option

This degree program provides a balanced approach between the theoretical concepts and applied principles of both environmental health and industrial hygiene. The curriculum builds on a scientific base (biology, chemistry, physics) and includes core courses in health science, foundation courses in environmental and occupational health, and elective courses that allow for specialization. Students are academically prepared to make significant contributions to society by anticipating, evaluating, and controlling environmental and occupational health hazards. Career opportunities abound in government agencies, private industry, consulting, and research organizations. The program also provides preparation for graduate studies and acceptance into professional schools (medicine, dentistry, pharmacy, optometry, veterinary medicine, law).

The option is accredited by the National Environmental Health Science and Protection Accreditation Council and approved by the California Department of Health Services. Students in the major are eligible for the following:

1. paid internships with federal agencies such as the U.S. Public Health Service,
2. national and state scholarships, and
3. entrance to the Registered Environmental Health Specialist (REHS) exam immediately following graduation (without having to serve an 18-month traineeship).

Environmental Health Science/Industrial Hygiene Option Units

Requirements	21
Option requirements: HS 160, 162, 168	
	(9)
Option elective requirements (select four courses): HS 105, 135, 143, 145, 147, 151, 165, 166T	
	(12)
Additional requirements	32-33*
Basic Sciences: BIOSC 1A and 1B (or PHYAN 65); CHEM 1A, 1B, and CHEM 8 (or 128A); MATH 6 or 70 or 71 or 75; or DS 71, 71L; MICRO 20 (or 140); PHYS 2A, 2B	
	(28-29)*
Internship: HS 175	
	(4)
Total for option	53-54*

*This total indicates that 9 units of BIOSC 1A and CHEM 1A or PHYS 2A are used to meet General Education requirements and MATH 75 or DS 71 and 71L.

Health Administration Option

The health administration option provides a broad based program to prepare the student for positions within the health care system. The curriculum is designed with an emphasis on exposing the student to the principles of health administration and the application of these principles. For more information, see the departmental adviser.

Health Administration Option Units

Requirements	27
Option requirements: HS 90, 151; HS 154 or PL SI 181 or MGT 104; ECON 162; MKTG 100 or 100S	
	(15)
Option elective requirements (select from): HS 104, 114, 115, 129, 143, 168, 185F; HRM 150; MKTG 132; SOC 147	
	(12)
Additional requirements	12
ACCT 3; ECON 40 and 50; HS 182 or IS 52 and 52L; IS 105W or ENGL 160W	
Total for option	39

Occupational Safety and Health Option

The basic goals of the occupational safety and health option are to provide the specialized knowledge in the physical and social sciences that allow the individual to perform the functions within the scope of the professional safety and health position, and to successfully provide leadership to conserve life, health, and property. This option is designed to give students a thorough understanding of the great variety of

problems met in the occupational safety and health field.

Occupational Safety and Health Option *Units*

Requirements 27

Option requirements: HS 105, 143, 145, 151, 160, 168 (18)

Option elective requirements (select from): HS 141, 147, 162, 165, 166T, 170, 175 (9)

Additional requirements 11-14

Select three courses from the following: BIOSC 1A or PHYAN 65; CHEM 1A or 3A or 8; MATH 6 or 70 or 71 or 75; MICRO 20; PHYS 2A

Total for option 38-41

Students who desire to meet the recommendations for the Safety Professional should consult with the department adviser for the selection of General Education and elective courses.

Health Science Minor

The Minor in Health Science consists of 20 units composed of the health science core requirement and 5 units from the courses required in any one option. Consult the department adviser for assistance in program planning.

Note: The Health Science Minor also requires a 2.0 GPA and 6 upper-division units in residence.

Certificate in Alcohol/Drug Studies

The Department of Health Science is participating in a certificate of special study awarded to those students who successfully complete a minimum of 12 units of interdisciplinary academic coursework in the area of alcohol and drug abuse. (For complete details, see page 367, *Health and Human Services Interdisciplinary Courses* in this catalog.)

Master of Public Health Degree Program

This program is designed to prepare students in the broad area of public health. It includes preparation in the public health core and in one of the following options: Environmental and Occupational Health, Health Promotion, or Health Administration. Each option includes a field experience and a culminating experience.

Each fall, the MPH program admits students who demonstrate high academic ability and promise and have the professional

values and ethics appropriate to maintaining professional standards in the field. Applicants are expected to have a high degree of academic and professional preparation for this program and the ability to make significant contributions to the program.

Admission to the MPH program is a two-phase process. The first phase requires that a candidate meet the graduate divisions requirements for admission to the university, and the second phase is the admission to the MPH program. Applicants are required to complete the application booklet available in the department office.

- A. Admission to the university: A candidate must have achieved an undergraduate GPA of 2.5 on the last 60 units and submit official copies of university transcripts, and scores on the GRE.
- B. Admission to the MPH program: Candidates for admission to the program will be selected based on the following:
 - 1. Academic ability and preparation as demonstrated by:
 - a. GPA in the major
 - b. scores on the GRE
 - c. official transcripts, and
 - d. satisfactory completion of all prerequisites.
 - 2. Professional capabilities as demonstrated through:
 - a. three letters of recommendation (from employers and at least one from a former faculty member)
 - b. a statement of intent, and
 - c. an oral interview.

Once admitted to the program the student will be assigned to a faculty adviser in the option selected, and under the adviser's direction the student will follow a pattern of study designed to be completed in three years of late afternoon and evening study. Admission commences during the fall semester, and each student is admitted for a specific term. If a student is admitted and is unable to start the program, he or she will have to reapply for admission to another term.

Graduate-Level Writing Competence. The university requires that students have graduate-level writing abilities before being advanced to candidacy for the master's degree. Students must demonstrate these abilities by passing PH 208 or 280 and completing the writing requirement(s) for those courses.

Culminating Experience. A culminating experience is required of all California State University, Fresno students earning master's degrees. This requirement is met by completing a thesis, project, or comprehensive exam. A limited number of students may be permitted to undertake a thesis or project, depending on the availability of faculty or committee members.

Students considering a thesis or project need to consult with the faculty very early in their graduate program to assure completion of the assignment prior to graduation. Selecting a thesis or project is recommended for students who may at some point consider working toward a doctoral degree. Students who do not participate in a thesis or project must complete a comprehensive written examination. Further information about this options is available from the graduate program adviser.

The MPH program is designed around the following framework:

<i>Thesis or Project</i>	<i>Units</i>
Public Health Core	18
Option	12
Elective	3
Field Experience	4
Thesis or Project	4
Total	41

<i>Comprehensive Examination</i>	<i>Units</i>
Public Health Core	18
Option	12
Elective	6
Field Experience	5
Total	41

For additional information, please contact the Health Science Department at California State University, Fresno; 2345 E. San Ramon Avenue M/S MH30; Fresno, CA 93740-8031; (559) 278-8324.

COURSES
Health Science (HS)

48. First Responder and Emergency Care (3)
National Safety Council First Responder and Emergency Care course. Priorities of care, injuries, medical emergencies, crisis intervention, and casualty incidents. Includes bleeding, shock, fractures, poisoning, emergency childbirth, CPR Certification for meeting requirements. (2 lecture, 2 lab hours)

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90. Contemporary Health Issues (3)

Significance of basic health problems applicable to the young adult and to society. G.E. Breadth E1.

91. Introduction to Human Sexuality (3)

Physiological, psychological, social, cultural, and developmental considerations for lifelong understanding related to sexuality. G.E. Breadth E1. (Formerly HS 124)

92. Public Health Statistics (3)

Prerequisites: Students must take the ELM exam; students who do not pass the exam must record a grade of C or better in a college-taught intermediate algebra course. Introduction to descriptive and inferential statistics as applied to evaluation and research in allied health. Central tendency and dispersion; central limit theorem; hypothesis testing; ANOVA; correlation, nonparametric methods. Interpretations of public health statistics. (3 lecture hours)

100. Community Health (3)

Public health services as they affect the community; investigation and analysis of community health problems.

104. Global and Cultural Issues in Health (3)

Prerequisite: G.E. Foundation and Area D. Prerequisite: HS 90. Influence of culture on health and disease; relevant health issues of cultural and ethnic groups; alternative healing and holistic health; role of international health organizations; health problems on a world scale. G.E. Multicultural/International MI.

105. Risk Assessment and Analysis (3)

Human and environmental risks as they relate to injuries and illnesses; includes incident causation analysis and assessment. Areas of study encompass occupational safety, consumer products, human factors, environmental health, and human and property costs.

109. Epidemiology of Disease (3)

Prerequisite: HS 92. Modern concepts and principles of epidemiology; interaction of all agents, host, and environmental factors of communicable and noncommunicable diseases; problems of the aged.

110. Drugs, Society, and Health (3)

Examination of physical, neurological, emotional, social, and political factors affecting the use, misuse, and abuse of illicit substances in contemporary American society. Applies models of addiction and compulsive behaviors to gambling, food consumption, and sexual behavior. G.E. Breadth E1.

111. Alcohol and Alcoholism (3)

Physical, mental, and social factors related to the consumption of alcoholic beverages; the development of alcohol dependence.

112. Consumer Health (3)

Consumer health as it relates to selection of health care products and services; how to differentiate fact from fiction in health matters.

114. Health Behavior (3)

An introduction to the theory and practice of health behavior change. Covers individual behavior change methodologies and the effects of public and environmental change on individual health.

115. Health Issues of Aging (3)

(Same as GERON 115.) Basic principles and concepts of the aging process; includes the physical, social, emotional, and mental components of health. Benefits of health promotion and preventive action for the aging are also explored.

120. Elementary School Health Science Education (3)

Designed for the multiple subject teacher credential candidate (nonhealth science major) to meet current California legislative requirements including CPR Certification. Focus upon the methods, processes, and content used in the elementary schools for the teaching of health science. Student evaluation based on expected competencies.

121. Secondary School Health Science Education (2)

Designed for the single subject teacher credential candidate (nonhealth science major) to meet current California legislative requirements including CPR certification. Focus upon the methods, processes, and content used in the secondary schools for the teaching of health science. Student evaluations based on expected competencies.

126. Female Sexuality (3)

(Same as WS 127.) Studies on female sexuality which include past and present sexual roles, female sexual response patterns, and discussion of common problems encountered by women functioning as sexual beings.

129. Rural Health (3)

Health problems of rural areas including community medical services, medical facilities, federal, state, and local legislation and administrative problems.

130. Women's Health (3)

(Same as WS 130.) Examines current crises/controversies in women's health care. Includes conventional/alternative approaches to treatment, management, and prevention with emphasis on self-care and promotion of optimum health.

131. Principles of Health Education (3)

Study of the foundations, theories, systems, and principles of health education. Includes an analysis of social, medical, and environmental factors on health-related behaviors.

133. Health Education Methods (3)

It is strongly recommended that students complete HS 114 and HS 131 prior to enrollment in HS 133. Health education program planning, implementation, and evaluation. Provides needs assessment, health education curriculum development, and presenting and evaluating a health education intervention with a client group.

135. Introduction to Human Disease (3)

Prerequisites: HS 90; PHYS 33. Concepts and principles of disease and dysfunction of the human body. Detection, diagnosis, treatment, etiology, pathogenesis, and prevention.

141. Occupational Ergonomics (3)

Studies the science of ergonomics as it relates to injury/illness prevention and the promotion of a quality work environment. Ergonomics is the evaluation of people and their tools, materials, and equipment in a work setting. (Formerly HS 166T)

143. Occupational and Industrial Safety (3)

Application of safety and accident prevention measures that provide a basis for insight into the hazards of occupational and industrial situations.

145. Occupational Safety and Environmental Health Management (3)

Concepts and principles dealing with the problems, processes, evaluation, and solutions in the development, implementation, and management of an effective environmental health and occupational safety program.

147. Evaluation of the Occupational Environment I (3)

General principles of investigation for chemical and physical hazards commonly encountered in the occupational environment. Sampling strategies, quantitative analysis, combustible gases, organic vapors, and nonionizing radiation. (2 lecture, 2 lab hours)

148. Evaluation of the Occupational Environment II (3)
Prerequisite: HS 147. Concepts and principles of investigative analytical methods for hazards commonly encountered in the occupational environment. Ionizing radiation, noise, metals, and particulates including asbestos. (2 lecture, 2 lab hours)

149. Control of the Industrial Environment (3)
Prerequisites: HS 147, 168. Concepts and principles of controlling physical and chemical compounds in the industrial environment. (2 lecture, 2 lab hours)

151. Health Law and Legislation (3)
The theory and practice of managing inspection-based enforcement programs in health care and environmental health areas, with emphasis on legislation, procedure, and cases relating to public health.

152T. Topics in Health (1-3; max total 12)
Analysis and investigation of selected areas in school and community health, public health, and health and safety with some topics including laboratory experiences.

154. Health Care Administration (3)
Organizational design and managerial principles as they apply to the private sector of health care.

160. Principles of Toxicology (3)
Basic principles and concepts of toxicology with a particular emphasis on the regulation of environmental and industrial toxicants for man/woman.

161. Environment and Human Health (3)
General principles of environmental health with a particular emphasis on the interaction between man/woman and the environment. Environmental epidemiology, water, waste water, air, solid waste, ionizing radiation, and noise. Focuses on prevention and control of disease and injury caused by chemicals, physical hazards and microbes in our environment. Topics include toxic chemicals, food protection, air/water quality radiation, hazardous waste, etcetera.

162. Environmental Health (3)
Basic principles and concepts of environmental health with a particular emphasis on health hazards, communicable disease control, contamination control, food protection, rodent control, managing special environments, planned environments, and environmental health organizations.

163. Public Health Administration (3)
Principles of public health administration, fundamentals of organization, and administration in public health.

165. Directed Group Study in Environmental Health (3)
Prerequisites: HS 161, 162. Problems of environmental health studied through field trips, observations, demonstrations, and seminars. (2 lecture, 2 lab hours)

166T. Topics in Environmental Health (1-3; max total 12)
Analysis and investigation of selected areas in environmental health with some topics including laboratory experiences.

167. Public Health Laboratory Techniques (3)
Designed to provide training in the use of laboratory procedures and techniques of adjusting and operating monitoring equipment used in water quality, air pollution, noise pollution, food sanitation, radiological health, and toxic substances. (2 lecture, 2 lab hours) (Lab fee, \$25)

168. Occupational and Industrial Health (3)
Prerequisite: HS 161 or 162. Concepts of occupational health as they pertain to appraising and controlling environmental health hazards; occupational diseases, chemical, biological, and physical agents that produce organic or systemic damage. Problems in toxicology, measurement instruments, and evaluating health hazards.

170. Health Effects of Indoor Pollution (3)
A descriptive analysis of environments encountered at home and in the workplace with an emphasis on assessment of risk, health effects, and a review of federal regulations that apply to these environments.

175. Environmental Internship (1-6; max total 6)
Prerequisites: completion of 21 units of the environmental health science/industrial hygiene option in the health science major. Provides practical experience in environmental health. The internship may be with a governmental agency or industrial situation or a combination, depending upon the student's need. *CR/NC* grading only.

182. Computers for the Health Professions (3)
Introduction to the basic use and practical application of personal and mainframe computers in health-related professions. Laboratory use of computers covers word processing, SPSS, data entry, data manage-

ment, principles of programming, and use of on-line databases. (2 lecture, 2 lab hours)

185F. Fieldwork in Health (1-3; max see below)
Repeatable to 3 units in any one area, maximum total 6. Prerequisite: completion of 24 units of the health science major. Provides practical experience in a community work setting. *CR/NC* grading only.

188. Health Education Internship (3-6; max total 6)
Prerequisite: completion of 24 units with a minimum of a 3.0 GPA in the major or demonstration of competency in area of assignment. Provide formal practical experience in health education. The internship may be with the university's Student Health Service Peer Education Program, a governmental agency, a voluntary agency, private institution, or a combination, depending upon the student's need. *CR/NC* grading only.

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study*. Approved for *RP* grading.

Master of Public Health (PH)

(Only students who are formally admitted in the Master's of Public Health Program may enroll in the following courses.)

202. Advanced Public Health Statistics (3)
Prerequisite: HS 92 or equivalent. Theories and limitations of parametric testing: ANOVA, MANOVA, and regression. Focus on nonparametric testing and small samples including Kruskal Wallis, Median and Fischer tests. Preparation of data for computer analysis and interpretation of results. Resource issues related to data collection.

203. Seminar in Community Health Organization (3)
Prerequisite: HS 100. Individual research, analysis, and evaluation in relation to educational aspects of community health programs; group procedures; community organizations; selection, development, and use of media. Field assignments are required. (Formerly HS 203)

205. Risk Assessment Management (3)
Prerequisite HS 105. Development, organization, and administration of environmental health and occupational safety programs; individual research, risk assessment, analysis and evaluation of pertinent problems. Field assignments are required. (Formerly HS 205)

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206. Environment

and Occupational Health (3)

Application and evaluation of environmental health principles to air, land, water, waste, and occupational health with emphasis on contemporary issues.

208. Health Promotion (3)

Focuses on behavioral change techniques derived from many areas of applied research including behavior modification and social interaction theory. Information emphasizes the health relevant principles in each domain and shows how they can be used to understand or change public health problems.

209. Advanced Concepts

in Epidemiology (3)

Prerequisites: HS 92, 109 or equivalents; computer statistics program competency. Advanced principles and methods of epidemiology. Includes methods of organizing surveillance data, defining cases, testing hypotheses, analyzing effectiveness of methods, summarizing studies. Advanced statistical methods will be utilized with emphasis on interpretation of results.

210. Seminar in

Health Services Administration (3)

Prerequisite: HS 163. Individual research, analysis, and evaluation of the organization, administration, and legal aspects of health programs. Field assignments are required. (Formerly HS 210)

213. Health Planning

and Program Evaluation (3)

In-depth analysis of the principles and practices in comprehensive health planning and program evaluation. Field assignments are required. (Formerly HS 213)

221. Health and Disease of the Body Systems (3)

General principles of health and disease in the human body. Emphasis will focus on each organ system and the disease process. Preventive lifestyles will also be studied. Undergraduate preparation in anatomy and physiology is expected for each student.

222T. Seminar in School and

Community Health (1-3; max total 15)

Individual research, analysis, and evaluation of current topics in school health education and community health education programs such as family life education, consumer health problems, substance abuse, and chronic disease. Field assignments may be required. (Formerly HS 222T)

225. Foundation

in Health Promotion (3)

Prerequisite: PH 208. History and philosophy of health education. Psychological, so-

ciological, economic, and political theories relevant to the mission and process of health education with special reference to schools and colleges.

242T. Seminar in

Occupational Safety and Health

(1-3; max total 15)

Prerequisites: HS 105 and 143. Individual research, analysis, and evaluation of current topics such as loss control, product safety laws, and governmental occupational standards. Field assignments may be required. (Formerly HS 242T)

251. Health Care Economics (3)

Prerequisites: ECON 131 or FIN 120 or equivalent. Topics include demand and supply in health services sector; implications of public and private financing alternatives; constraints on manpower training and entry; equity and distribution competition and regulation; issues of productivity measurements and utilization; and political economy of health care.

253. Human Resources Management in Health Care (3)

The study of staffing, classification of labor, performance appraisal and other issues that apply to the diverse care providers within the health care milieu.

262T. Seminar in Environmental Health

(1-3; max total 15)

Individual research, analysis, and evaluation of current topics: air, water, housing, vector control, and other selected environmental health problems. Field assignments may be required. (Formerly HS 262T)

263. Air Quality Management (3)

Prerequisites: PH 202, 206, 209. Study of the concepts of air pollution including the analysis of relationships among sources, meteorology, health effects, monitoring, sampling, and emissions control systems. Current regulations will be reviewed with emphasis on interpretation and application of the regulations to industry.

264. Management of Water Pollution (3)

Prerequisites: PH 202, 206, 209. Analysis of the principles of water treatment and technical aspects of water pollution control, including cause and effect of water pollution.

265. Hazardous Materials Management (3)

Prerequisites: PH 202, 206, 209. Analysis and evolution of operations and processes for solid and hazardous materials generation, storage, processing and disposal, including the review of regulations and industrial applications.

266. Industrial Hygiene Principles (3)

Prerequisites: PH 202, 206, 209. Theory and practice of industrial hygiene with application of regulations to the recognition, evaluation and control of workplace hazards. Evaluation of industrial hygiene techniques and instrumentation in the solution of workplace hazards.

280. Seminar in

Techniques of Health Research (3)

Research methodology, identification of health research problems, use of library resources, data gathering, and processing; writing a research report. (Formerly HS 280)

285F. Fieldwork in Health

(1-4; max total 10)

Planning, implementation, participation, evaluation in selected areas: safety, school health, community health, physical handicaps, occupational health, and environmental health. Approved for *RP* grading. *CR/NC* grading only. (Formerly HS 285F)

290. Independent Study

(1-3; max total 6)

See *Academic Placement—Independent Study*. Approved for *RP* grading. (Formerly HS 290)

298. Project (2-4; max total 4)

Prerequisite: advancement to candidacy for MPH degree in Health Science. See *Criteria for Thesis and Project*. A significant endeavor in health science that may include an educational booklet, audiovisual presentation, evaluation of a health agency, or the development of an experimental device or piece of equipment. A narrative component is required which will follow a formal format and shall include a written abstract. Approved for *RP* grading. (Formerly HS 298)

299. Thesis (2-4; max total 4)

Prerequisite: See *Criteria for Thesis and Project*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Approved for *RP* grading. (Formerly HS 299)

IN-SERVICE COURSE

(See *Course Numbering System*.)

Health Science (HS)

302. Selected Topics in Health

(1-3; repeatable with different topics)

Topics in community health, environmental health, health services, and occupational safety and health for teachers, health professionals, and others.