

Department of Environmental Health

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The Department of Environmental Health offers a three-year program in environmental health. Students are admitted to the department after the completion of the freshman science program or its equivalent, and awarded a Bachelor of Science degree upon graduation. The curriculum provides a broad education in basic sciences and a fundamental knowledge of environmental health. Emphasis is placed on the evaluation and control of major environmental health problems in developing countries in such fields as water supply, waste disposal, food hygiene, occupational health, radiation protection, air and marine pollution, and control of disease vectors. Students in this program are also required to take public health courses in the fields of epidemiology, biostatistics, health services administration, and public health education, which lead to a minor in public health.

Developing countries are in great need of qualified personnel capable of planning and implementing programs for the improvement of the human environment. This provides great opportunities for graduates of this program.

Many students earning a BS from FHS enter the work force directly upon graduation and find well-paying jobs. The following types of institutions in Lebanon have hired EH graduates:

- Public/governmental agencies
- International organizations
- Private companies
- Non-governmental organizations
- Academic/research institutions

ENHL 200 Environment and Health 3.0; 3 cr.

This course exposes the students to major local and global environmental issues relating to air, water, land and energy and the importance of proper integrated management to promote and protect public health and achieve sustainable development. In addition, the course highlights the importance of environmental laws and policies as major tools in the management of environmental health issues. Environmental ethics is also emphasized as a critical core factor of the management processes. The importance of environmental awareness of different stakeholders is exposed as a means to achieve proposed objectives. *Open to freshman students only.*

ENHL 220 Introduction to Environmental Sciences 3.0; 3 cr.

An introductory course that explores the interdisciplinary nature of environmental studies. This course covers a variety of topics: population growth, biodiversity, air and water pollution, work environment, domestic and hazardous wastes, energy, technology, environmental economics, ethics, and policy. Preventive and control programs are discussed within the overall context of sustainable development.

ENHL 221 Management of Domestic and Hazardous Wastes 3.0; 3 cr.

A course that introduces the elements of solid waste management: sources, characterization, generation rates, collection, transportation, and disposal technologies. Concepts are presented within the context of integrated management: reduction, reclamation, recycling, and disposal. Socioeconomic implications at the community and national levels are emphasized. *Prerequisite: ENHL 220.*

ENHL 230 Food Quality and Control 4.0; 4 cr.

A course that introduces the concept of quality control in terms of wholesomeness and safety. Management of food from production to consumption (preparation, processing, preservation, storage, marketing, trading) is thoroughly discussed. Emphasis is placed on the development, implementation, and appraisal of food control programs (such as HACCP) at the national and international level. *Prerequisite: BIOL 200/201, CHEM 208 and ENHL 220.*

ENHL 231 Water and Wastewater Quality Control 3.0; 3 cr.

A course that focuses on the principles of water management (both in quantity and quality) with emphasis on fresh water resources for domestic and multi-purpose utilization. Characterization, treatment, reclamation, and recycling of wastewater are also discussed. National and international guidelines, standards, and directives for water and wastewater management are presented. *Prerequisite: ENHL 220.*

**ENHL 232 Instrumentation, Analytical Techniques,
and Sampling 2.3; 3 cr.**

A course that focuses on the basic concepts and application of different sampling methods, and instrumental and analytical techniques: electrical conductance, absorption spectrophotometer (visible, ultraviolet light, infrared, atomic absorption), emission (flame photometry) and chromatography (gas chromatography, high performance liquid chromatography, ion chromatography).

ENHL 233 Quality Determination of Water and Wastewater 1.4; 3 cr.

A course that focuses on the quality determination (physical, chemical, biochemical, and microbiological) of water and wastewater samples using standard analytical techniques. Students are required to write professional quality assessment reports. Proper presentation and interpretation of results and practical recommendations for preventive or corrective measures are emphasized. *Prerequisite: ENHL 220, 231 and 232.*

ENHL 234 Occupational Health and Toxicology 3.2; 4 cr.

A course that provides an overview of the general principles relating to occupational health and toxicology. Exposures to hazardous agents in the environment are discussed with emphasis on the working environment, routes of entry, mode of action, toxicity, metabolism, and dose-response relationships. Health hazards to workers and principles of recognition, evaluation, and control of work hazards are presented. The principles of risk assessment are introduced. *Prerequisite: BIOL 200/201, CHEM 208, 209 and ENHL 220.*

ENHL 236 Summer Field Training 0 cr.

Field training is offered to students at the end of their second year in the environmental health program. This course provides students with practical and field experience to supplement the theoretical and laboratory knowledge. Visits to selected sites include: water and wastewater treatment plants, food industries and establishments, landfills, and other areas. Emphasis is placed on writing technical reports, evaluating environmental conditions, and recommending corrective and control measures. This course also introduces the principles of geographical information systems, walk-through surveys, and management of community-based environmental programs. *Prerequisite: Completion of the requirements of first and second EH years.*

ENHL 237 Environmental Microbiology 3.3; 4 cr.

In its first part the course covers the fundamental aspects of microbiology in relation to environmental health. In its second part the course covers infectious diseases of man and animals transmitted through air, fresh and saline water, food, soil, municipal solid wastes, and wastewater. The laboratory sessions cover basic microbiological techniques and applications (aseptic and cultivation techniques, microscopy, microbial growth requirements, biochemical profile of micro-organisms, and antibiotic sensitivity testing) and expose students to principles of quality assessment of environmental samples by applying standard analytical techniques and emphasizing quality control protocols. *Prerequisite: BIOL 200/201 and ENHL 220.*

ENHL 241 Indoor and Outdoor Air Pollution 3.0; 3 cr.

A course that discusses exposure and health effects of indoor (e.g., asbestos, tobacco smoke, formaldehyde, radon) and outdoor air pollutants. Students are introduced to modeling, quality determination, and management strategies. *Prerequisite: CHEM 208, ENHL 220 and senior standing.*

ENHL 242 Environmental Management Tools and Applications 2.4; 3 cr.

A course that provides an overview of the general principles relating to environmental management tools and applications. Topics covered include environmental impact assessment, environmental auditing, and environmental regulations and standards. To provide students with practical experience, they are requested to conduct a community-based environmental health project. Emphasis is placed on investigating the problem and proposing management strategies. *Senior standing required. Prerequisite: ENHL 230, 233 and 234.*

ENHL 243 Global Environmental Issues 1.6; 3 cr.

A course that reviews a specific global environmental issue in which students are required to write a paper and present a seminar on the selected topic. Emphasis is placed on stating the problem clearly and presenting control strategies and recommendations for action plans. *Senior standing required. Prerequisite: ENHL 241 and 242.*

Modes of Analysis	English and Arabic(9)	Humanities (12)	Social Sciences (12)	Natural Sciences (9)	Quantitative Thought (6)	Major Courses
Lecture Course (9+12+12+9+6+27)	1. Required Arabic Course (3) 2. Required English Courses: ENGL 203(3), 204(3)	PHIL 209(3), 3 electives (9)	1. HMPD 251(3) 2. HBED 203(3) 3. HBED 237(3) or HMPD 204(3) 4. non-FHS elective (3)	1. BIOL 200(4) 2. CHEM 208(3)	1. EPHD 203(3) 2. EPHD 213(3)	ENHL 220(3), 221(3), 230(4), 231(3), 233(3), 234(4), 237(4), 241(3)
Lab (4+4)				1. BIOL 200(4) 2. CHEM 209(2)	1. EPHD 203(2)	ENHL 232(3), 234(4), 233(3), 237(4)
Seminar (2)						ENHL 242(3), 243(3)
Research Project (4)					1. EPHD 213(3)	ENHL 242(3), 243(3)
Fieldwork						ENHL 236

Students take, in addition to the above required courses, 9 or 12 free elective credits in various fields and modes of analysis.