Proposal for Graduate Certificate in Environmental Health in the Master of Public Health (MPH) Department

WHEREAS, the M.P.H. Department has proposed a Graduate Certificate in Environmental Health [16 credit hours]; and

WHEREAS, the Graduate Council approved their request at the meeting of April 12, 2006;

THEREFORE, BE IT RESOLVED that the Campus Senate of the University of Illinois at Springfield hereby approves the Graduate Certificate in Environmental Health.
A. **Purpose of certificate: Objectives and Learning Outcomes**

This is a competency-based graduate certificate designed to provide continuing education opportunities for health professionals to function efficiently in their practice. The training of competent public-health professionals has never been more urgent. The Pew Health Professions Commission who defined acceptable standards of skills and competencies for contemporary public health practitioners recognized this urgency. In addition, the global nature of public health problems, and the essential role of public health professionals as one of the frontline responders in a health-related emergency make these graduate certificates essential for strengthening the public health workforce.

This certificate will strengthen and supplement the program by allowing those without formal public health training, those interested in life-long learning, and mid-career professionals an avenue to enhance their knowledge and skills, as well as an opportunity for individual professional growth.

The learning objectives are in section C and Appendix A.

B. **Target audiences**

Applicants could be individuals who are non-degree seeking health professionals at the local, state, and federal level, or professionals from other for-profit and non-profit agencies, interested in enhancing their competencies and/or skills in this area of specialty.

C. **Proposed curriculum:**

The certificate requires successful completion of all the listed coursework. Students may complete the certificate requirements on a part-time basis within a cycle of three to four semesters. A minimum of a "B" grade is required for all courses. A course is failed when any grade less than a B is attained, and the course could be repeated once. The courses are offered on campus at least once a year during the fall, spring, or summer semesters

*Environmental Health Certificate [16 credit hours]*

Courses: Environmental Toxicology, Foundations of Epidemiology, Environmental and Occupational Health, and Environmental Risk Assessment

Learning objective: (Required Skills as defined by the National Environmental Health Science and Protection Accreditation Council) – toxicology; epidemiology; risk assessment, management and communication and general environmental and occupational health.

Students completing the **graduate certificate in environmental health** will have basic skills of environmental health and protection necessary to understand the scope, values, goals and potential of environmental health and protection. Students completing the graduate certificate in environmental health shall be able to:

- Understand basic threats to environmental health and potential interventions and legislation for protection of public health from these threats
- Investigate patterns of illness and evaluate potential linkages of illness to environmental sources
• Evaluate the role of absorption, distribution, accumulation, and elimination in chemical toxicity.
• Evaluate risk and population data key to individual risk assessment and management policy development.
• Identify chemical-, physiological-, media, and route-specific information important in evaluating toxicity, hazard and risk.
• Identify risk assessment strategies appropriate for different environmental and occupation situations.
• Design a risk assessment and management procedure for a selected environmental and/or occupational dilemma.

Required Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MPH 429</td>
<td>Environmental Toxicology [same as ENS 449]</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>MPH 511</td>
<td>Foundations of Epidemiology [same as ENS 561]</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>MPH 521</td>
<td>Environmental &amp; Occupational Health [same as ENS 563]</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>MPH 527</td>
<td>Environmental Risk Assessment [same as ENS 521]</td>
<td>4 hrs.</td>
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* This certificate would help prepare students who plan to sit for the Licensed Environmental Health Practitioner exam requirement.

D. Relation to degree programs:

Majority of the courses are offered within the MPH and ENS on-campus curricula. Courses are the same as for the existing full graduate degree programs.

E. Occupational and/or student demand:

The Department of Health and Human Services [DHHS] 1997 report “The Public Health Workforce: An Agenda for the 21st Century”¹ advocated for a system with a stronger government public health workforce. This DHHS 1997 report broadened the operational definition of public health regardless of organization. At the state level, many employees in environment, agriculture, or education departments have public health responsibilities and are included. In the public sector, responsibilities for public health functions are shared among multiple agencies.

A recent 2005 study by the same agency documented deficiencies in competencies and training of public health workers². Some lacked knowledge in the core public health concepts. The study recommended continuing education programs for those with no formal public health training. Such training should include and emphasize the core functions of public health: assessment [community diagnosis], policy development and leadership; and assurance of access to environmental, educational and personal health services. The study, also, criticized the research-oriented training by most schools of public health. The proposed graduate certificates should address the shortfall in training disclosed by this report.


There will continue to be a strong demand for public health practitioners including environmental health workers. There could be a shortage of public health employees in a few years due to retirements and the aging population of this workforce (mean age: 46.6 years).  

F. **Staffing and resource requirements:**
   No additional resources are required. The faculty responsible for teaching these courses are: Drs. Remi Imeokparia and Sharon Lafollette.

G. **Administrative issues:**

1. Responsible Administrative unit

2. Admissions
   a) Eligibility
      Individuals with bachelors’ degrees from accredited colleges and universities are eligible to apply for admission to graduate study at the UIS, and will qualify for admission to take these certificates.

   b) Admission process
      Applicants for the Graduate Certificate must have been admitted to the university. Applicants who have completed the department graduate certificate application will be considered by the admissions committee. Background in the biological sciences demonstrated by transcript credit of at least three semester hours is desirable. Admission will be based on an overall GPA of 3.0 on a 4-point scale.

      Applicants, while pursuing the certificate, may decide to apply these courses toward the full degree, but must meet all Department requirements before acceptance into the MPH program. Applicants who have completed one or more of these graduate certificates and are interested in the full MPH degree must also meet all Department requirements before acceptance into the MPH program.

3. Advising:
   Advising will be provided for each student. Upon admission to the graduate certificate program, each student will be assigned a faculty adviser within the appropriate area of specialty.

4. Tracking:
   Tracking files will be available in the MPH program.

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APPENDIX A.
Environmental Health Certificate: Course descriptions and objectives

1. MPH 429 Environmental Toxicology (4 Hrs.)
Study of effects of toxic chemicals on the environment. Included are sources, transport, chemical behavior, and toxic mechanisms of environmental pollutants. See ENS 449

Learning objectives

- Articulate the basic terms and concepts of toxicology.
- Discuss the basic concepts of generalized and specialized toxicity testing.
- Identify chemical-, physiological-, and route-specific information important in evaluating toxicity and hazard.
- Evaluate the role of absorption, distribution, accumulation, and elimination in chemical toxicity.
- Evaluate the role of biomonitoring and hematological, urological, and physiological tests important in identifying adverse health outcome from chemical exposure.
- Interpret toxicity and hazard for a variety of chemical and physical agents.

2. MPH 511 Foundations of Epidemiology (4 Hrs.)
Introduction to epidemiological concepts and methods. Considers the meaning and scope of epidemiology and the uses of morbidity, mortality, and other vital statistics data in the scientific appraisal of community health. See ENS 561.

Learning objectives

- Describe uses and applications of descriptive and analytical epidemiology.
- Use the concept of descriptive epidemiology to analyze an outbreak investigation.
- Understand and describe basic epidemiologic study designs.
- Make relevant inferences from data by recognizing the roles of chance, bias and confounding in the interpretation of studies.
- Critique and evaluate journal articles.

3. MPH 521 Environmental and Occupational Health (4 Hrs.)
Recognition, analysis, and control of major environmental and occupational diseases and issues. Examines policy, law, economics, politics, and liability as they relate to environmental and occupational health. Prerequisites: MPH 503, and MPH 511.

Learning objectives

- Describe various environmental and occupational influences on health.
- Use readings to identify trends in environmental and occupational health.
- Conceptually develop plans to reduce environmental and occupational health hazards.
- Identify the role of the public health practitioner in the field of environmental and occupational health.
- Compare health hazards common to a variety of occupations and environments.
- Describe communication and education strategies for environmental and occupational health promotion.
• Evaluate sampling technologies and databases relating to environmental and occupational health

4. MPH 527 Environmental Risk Assessment (4 Hrs.)
Introduction to the many aspects of risk assessment, the relationship between risk assessment and public policy and the perception of risk. Students will be expected to work out elementary problems in risk and exposure assessment. See ENS 521.

Learning objectives

• Identify risk assessment strategies appropriate for different environmental and occupation situations.
• Evaluate risk and population data key to individual risk assessment and management policy development.
• Identify external legislation and social factors that drive internal risk assessment and management policies.
• Identify ethical considerations that need to be incorporated into the risk management decision-making process.
• Evaluate effectiveness of environmental and occupational program policies and decisions in risk assessment and risk management.
• Design a risk assessment and management procedure for a selected environmental and/or occupational dilemma.