Environmental Health Sciences - MS
Group 1: Cycle 1 - Fall 2017 - Summer 2019

Currently status is: Report Accepted

ASSESSMENT REPORT FOR Group 1: Cycle 1 - Fall 2017 - Summer 2019

Mission Statement

The general mission of the Department of Environmental Health Sciences is to understand how environmental exposures affect human health and disease, and how human activity affects the environment. Due to the diversity and collegiality within the department, our faculty members are uniquely poised to study, as well as provide advanced education and training, at the intersection of environmental and human health, specifically within the areas of environmental- and public health-related microbiology, toxicology, exposure assessment, spatial analyses and modeling, and ecosystem health assessment. A core component of our departmental mission is to demonstrate how basic and applied research within these areas may be used to improve public health from the local- to the global-level.

The specific mission of the MS in Environmental Health Sciences is to prepare students for a professional career or advanced graduate studies with a focus on the scientific basis of environmental health sciences.

Goal 1.

Graduates will A.) demonstrate competency of the major concepts and applications of public health principles in environmental health sciences; and will B.) demonstrate competency of the major concepts and applications of environmental health practice specific to their respective research interest

Curriculum

The MS degree with a major in environmental health sciences is an academic research degree which may be tailored to individual interests and job market needs. The MS degree requires a minimum of 36 credit hours of study and research, and combines real-world problem solving and research skills with other technical, health and related skills to prepare effective environmental health researchers for the public and private sectors. MS students complete a thesis that provides in-depth study of the scientific basis within a selected area of concentration and development of specialized research skills.

The curriculum for the MS degree includes:

ENHS 660 (Concepts of Environmental Health Sciences
EPID 700 (Introduction to Epidemiology)
PUBH 700 (Perspectives in Public Health)
12 hours of additional departmental courses as determine by the student's advisor and research committee
9 hours of quantitative and technical courses as determined by the student’s advisor and research committee
6 hours of thesis preparation

Courses that are currently taught and provide opportunities for students to obtain this learning outcome include: ENHS 661 (Parasitology), ENHS 664 (Environmental Genomics); ENHS 665 (Biofilms in Environmental Health and Disease), ENHS 670 (Environmental Pollutants and Human Health), ENHS 675 (Infectious Disease Ecology), ENHS 760 (Fundamentals of Air Pollution), ENHS 761 (Ecotoxicology of Aquatic Systems), ENHS 765 (Applied Research in Environmental Health Sciences), ENHS 766 (Applied Aquatic Sciences), ENHS 767 (Ecological Modeling and Environmental Planning), ENHS 769 (Exposure and Risk Assessment), ENHS 771 (ENHS Seminar), ENHS 772 (Human and Ecological Risk), ENHS 775 (Resource Management and Environmental Impact Assessment), ENHS 778 (Air Pollution Monitoring and Monitoring), ENHS 780 (Advanced Seminar in Environmental Monitoring), ENHS 790 (Independent Study), ENHS 793 (Selected Topics in Environmental Health Sciences), and ENHS 798 (Public Health Practice).

Learning Outcome 1.

Students are expected to demonstrate an overall mastery of concepts of environmental health sciences; demonstrate competency of the major concepts and applications of environmental health specific to their respective area of research; and display the ability to extend this understanding to relevancy and application

to real-world environmental health sciences issues.

Measures and Criteria

1) In accordance with Graduate School regulations, all MS students must pass a comprehensive exam. Successful completion of the exam indicates that the student has an overall mastery of the core concepts of environmental health sciences and has demonstrated competency of the major concepts and applications of environmental health practice specific to their respective area of research, and thus has successfully completed the program goal as defined above. The specific content of each comprehensive exam is tailored to cover the basic concepts of public health and environmental health sciences within the context of the student's program of study. Furthermore, the comprehensive exam also consists of a series of questions that allow the committee to assess students' ability to apply their knowledge to broad real-world issues. In the event a student does not successfully pass the comprehensive exam on the first attempt, the student is provided a second attempt to pass the exam. More than 90% of our MS students will successfully pass the Comprehensive Examination on the first attempt.

2) Students will be measured by embedding specific questions on the final exam in ENHS 660. The average score on the embedded questions will be at least 80%. These questions not only test for broad overall ENHS knowledge but also assess students' understanding of how this knowledge applies to current real-world topics.

Methods

1) The Comprehensive Exam may consist of both a written component and an oral component as determined by the student’s Advisory Committee. This exam is administered following completion of formal coursework. A score of 70% or higher is considered passing. The Graduate Director will aggregate and summarize data concerning the results of all MS students that completed their Comprehensive Exams. Results will be shared and discussed with the department faculty as a whole at the end of spring semester. Appropriate recommendations for the program change will be made and recorded in the program faculty minutes.

2) Faculty teaching ENHS 660, who administered the exams with embedded questions, will submit this information to the department's Graduate Director. The Director will aggregate and analyze the data, and submit a report to the department Chair. Data will be parsed based on program identification and MS specific data will be analyzed to determine success rates. Results will be shared and discussed with the department faculty as a whole at the end of the spring semester. Appropriate recommendations for the program change will be made and recorded in the program faculty minutes.

Results

Comp exams: In the past two years, 3/3 (100%) passed the comprehensive exam on the first attempt.

ENHS 660:

- Fall 2017: 10 students, average score 89.3
- Fall 2018: 4 students, average score 90.4

These criteria were met.

Use of Results

No changes to either the curriculum or the assessments are warranted at this time based on the assessment results.

Learning Outcome 2.

Students are expected to understand and be able to discuss specific applications of environmental health practice in their respective area of research interest.

Measures and Criteria

1) Students will be measured by successfully completing course reports and presentations specific to each course offered within a semester for ENHS classes. This assessment will be at the student-level where all relevant grades will be examined for each MS student. At least 90% of MS students will receive passing grades on course-specific reports and presentations.

Methods

1) Faculty teaching ENHS courses with MS students registered in them will be asked to summarize the

results of MS students in passing assignments in which students wrote reports and gave oral presentations. For each activity, the professor will provide a summary of what percentage of MS students passed the assignment to the department's Graduate Director. The Director will aggregate and analyze the data, and submit a report to the department Chair. Results will be shared and discussed with the department faculty as a whole at the end of the spring semester. Appropriate recommendations for the program change will be made and recorded in the program faculty minutes.

Results

- Fall 17: 6/6 (100%) passed
- Spring 18: 4/4 (100%) passed
- Fall 18: 3/3 (100%) passed
- Spring 19: 1/1 (100%) passed

This criterion was met.

Use of Results

No changes to either the curriculum or the assessments are warranted at this time based on the assessment results.

Goal 2.

Graduates will identify major issues and gaps of knowledge in a specific area of the environmental health sciences, develop original hypotheses to guide research addressing these issues, design an original effective research program to test these hypotheses, and defend research findings that make significant original contributions to the environmental health sciences

Curriculum

ENHS 799 (Thesis preparation)

Learning Outcome 1.

Students will demonstrate the ability to develop original hypotheses to address relevant concerns in the environmental health sciences and possess skills to advance the role of environmental health sciences in the field of public health.

Measures and Criteria

1) Students who complete the MS degree must perform, under the guidance of a faculty Advisor and Research Committee, a research project culminating in a thesis. This will involve critical thinking to understand the research process, to formulate key research questions and hypotheses, to design studies, collect data, and integrate data and knowledge that will culminate in a thesis. Greater than 90% of all MS students should have the final thesis approved by the respective committee.

Methods

Students will be evaluated by their advisor and thesis committee on their ability: 1) to formulate questions and hypotheses related to an important environmental health issue; 2) to design a study to test hypotheses; and 3) to collect and analyze data, interpret and draw conclusions, and 4) summarize results. These abilities will be assessed by the advisor and committee by means of thesis development, thesis defense, and successful completion of the comprehensive exam. The thesis must be based on original research and should enhance existing or add new knowledge to the environmental health sciences. Final results will be shared with the Graduate Director, the department Chair, and all ENHS faculty to assess the need for programmatic changes.

Results

Across the past two years, 3/3 (100%) of students completed their thesis.

This criterion was met.

Use of Results

No changes to either the curriculum or the assessments are warranted at this time based on the assessment results.

Learning Outcome 2.

The student must demonstrate detailed knowledge of how their specific studies fill a gap in the field of environmental health sciences. The student must also demonstrate detailed understanding of specific

research topics examined as part of the thesis and the ability to apply this knowledge to broader real-world environmental health topics.

Measures and Criteria

At least 50% of MS students will have a manuscript from their thesis published in a peer-reviewed journal within 5 years of program completion.

As there is an expectation that faculty mentors will be co-authors on publications, tracking of journal acceptance over the moving five-year window will be via a review of annual faculty reports.

Methods

The successful completion of an original thesis and the passing of the comprehensive exam will be evaluated by the student's thesis committee. Publication of thesis work in peer-reviewed journals will be noted by the student advisor and information collected yearly by the Graduate Director for analysis. The Graduate Director will maintain a database concerning the submission of manuscripts by MS students and the success of those students in getting the manuscripts accepted for publication. At the end of each academic year the Graduate Director will present an overview of manuscript submission and acceptance to the department Chair and the ENHS faculty.

Results

As of spring 2018, 8 students graduated in the past five years. Of those, 8 (15%) published at least one paper in a peer-reviewed journal. We need to examine this data further.

Use of Results

Over the past 5-10 years, the job market for MS graduates has changed. In the past, most of our students went into jobs where publications were expected either prior to employment or as part of employment. That is no longer the case. Once students are employed, they tend to lose interest in publishing in peer-reviewed journals if it is not part of their jobs. With this in mind, we have decided to assess their skills as part of the thesis process in the next assessment cycle.