

REVIEW OF THE B.S. IN ENVIRONMENTAL HEALTH

Classification of Instructional Program (CIP) Code: 51.2202
Environmental Health

OVERVIEW

The B.S. in Environmental Health program at Illinois State University is housed in the Department of Health Sciences within the College of Applied Science and Technology. The department also offers three minors (environmental health, public health, and safety), a B.S. in Health Information Management, a B.S., B.S.Ed. in Health Promotion and Education, a B.S. in Medical Laboratory Science, and a B.S. in Safety. The Department of Health Sciences does not currently offer programs at the graduate level. The B.S. in Environmental Health and the B.S. in Health Information Management have been reviewed in the current program review cycle, whereas the other three baccalaureate programs of the department are scheduled for review in 2018-2019.

Environmental health focuses on assessment, control, and prevention of biological, chemical, and physical hazards in the environment that may lead to human health problems or environmental damage. Graduates of the program are employed in a variety of positions and settings, including community environmental public health, industrial hygiene, institutional environmental health, environmental protection, and environmental health and safety. Graduates of the program are immediately eligible to take the State of Illinois Licensed Environmental Health Practitioner (LEHP) examination and the National Registered Environmental Health Specialist (REHS) examination. Among the professional certifications available to experienced environmental health professionals are Certified Industrial Hygienist (CIH), Qualified Environmental Professional (QEP), and Certified Hazardous Materials Manager (CHMM).

The B.S. in Environmental Health program at Illinois State University is the only academic program in Illinois at any postsecondary level assigned CIP code 51.2202 (Environmental Health) by the Illinois Board of Higher Education. The program is one of only 29 environmental health programs in the U.S. accredited by the National Environmental Health Science and Protection Accreditation Council (EHAC).

Enrollment and Degrees Conferred, 2010-2017

B.S. in Environmental Health, Illinois State University

	2010	2011	2012	2013	2014	2015	2016	2017
Enrollment, fall census day	95	102	103	100	101	84	88	81
Degrees conferred, graduating fiscal year*	21	21	33	33	28	30	35	29

* Summer, fall, and spring terms (e.g., graduating fiscal year 2017 consists of the following terms: summer 2016, fall 2016, and spring 2017)

EXECUTIVE SUMMARY PROGRAM REVIEW SELF-STUDY REPORT

Program goals

- To provide a comprehensive academic program to prepare future environmental health professionals to meet the needs of the state, the nation, and the international community
- To recruit and retain a diverse group of students and prepare them to be successful in the future
- To provide opportunities for students to receive individualized, hands-on learning opportunities
- To continuously monitor and improve the quality of the environmental health program

Student learning outcomes

- Anticipate hazards
- Recognize hazards
- Evaluate hazards
- Identify interventions
- Implement interventions
- Evaluate interventions
- Professional attributes
- Professional communication

Program curriculum (2017-2018)

Graduation requirements: 120 credit hours consisting of 81 credit hours of courses in or related to the major, with the balance of credit hours earned through additional General Education courses or elective courses. The 81 credit hours of courses in or related to the major include 20 credit hours of required General Education courses, 18 credit hours of required health sciences courses, 16 credit hours of required courses outside the discipline, 15 credit hours of health sciences electives, 3 credit hours of an elective course in health sciences or a related discipline, and 9 credit hours of professional practice. This program has no sequences.

Program delivery

The program is offered on the Normal campus.

The program is offered primarily through a traditional face-to-face format.

Department faculty (Fall 2017)

16 tenure track faculty members (5 Professors, 5 Associate Professors, and 6 Assistant Professors)

8 non-tenure track faculty members (3 full-time and 5 part-time, totaling 4.38 FTE)

Student to faculty ratio: 20.1 to 1

Student to tenure-line faculty ratio: 25.9 to 1

Department of Health Sciences faculty members collectively provide instruction for students enrolled in one of five undergraduate degree programs offered by the department. Core faculty members of the B.S. in the Environmental Health program (one of those five programs) include four tenure track faculty members (two professors, one associate professor, and one assistant professor) and one non-tenure track faculty member. Credentials of faculty members include Licensed Environmental Health Practitioner (LEHP), Master Certified Health Education Specialist (MCHES), and Certified Industrial Hygienist (CIH). Publications by faculty members since the prior program review include peer-reviewed journal articles, book chapters, and a textbook. Faculty members have served as principal investigator or co-principal investigator for research projects funded by the National Science Foundation, U.S. Department of Energy, Omron Foundation, or the Illinois Sustainability Technology Center. University recognitions of faculty have included the Outstanding University Researcher Award and the Research Initiative Award.

Specialized accreditation

The Environmental Health program is accredited by the National Environmental Health Science and Protection Accreditation Council (EHAC). The program was last evaluated by EHAC in 2013 and was subsequently re-accredited through 2019. Faculty has also considered applying for accreditation through the Accreditation Board for Engineering and Technology (ABET), the accreditation body most closely associated with the industrial hygiene sub-discipline. ABET accreditation of the program would allow graduates to take the certified industrial hygienist (CIH) examination six months sooner. Faculty has deferred an application to ABET until funding commitments can be secured to cover costs associated with the initial accreditation application and annual accreditation maintenance fees.

Changes in the academic discipline, field, societal need, and program demand

The job market for graduates of the environmental health program at Illinois State University has remained stable, although opportunities for program graduates have varied by sub-discipline. Opportunities for industrial hygienists to work in government, industry, or private consulting have been increasing; that trend is expected to continue during the next program review cycle. Demand for community environmental health specialists to work at local and national levels continues to be robust. A significant majority of students enrolling in the environmental health program seek careers in environmental protection. Unfortunately, the demand for students graduating with that specialization has not been strong; however, there has been an increase in the number of program graduates hired as environmental health and safety professionals at small- to mid-sized companies. Those jobs have provided graduates opportunities for some environmental protection work, but graduates hired for those positions have needed training expertise in industrial hygiene and safety to be successful. The environmental health program at Illinois State continues to have a national reputation for graduating highly-skilled and well-prepared students, which has helped graduates with their employment searches. Some federal agencies routinely reach out to the Department of Health Sciences in search of environmental health students interested in serving as interns or applying for ongoing positions with those agencies.

Response to previous program review recommendations

Continue to recruit and retain underrepresented students. Efforts to recruit students self-identifying with racial or ethnic groups traditionally underrepresented in the discipline and in the environmental health program at Illinois State have had some success. Those efforts will continue during the next program review cycle.

Continue efforts to acquire external funding and to develop collaborative partnerships across campus. Efforts since the 2009-2010 program review to develop collaborative research partnerships and obtain external funding to support them have been highly successful. As one example, an environmental health faculty member collaborated with a faculty member in the Department of Agriculture at the University, received a cross-disciplinary development grant from the University to support the collaboration, and in 2017 submitted a proposal to the U.S. Department of Agriculture for funding to support the research initiative. The collaboration led to a provisional patent filed by the faculty members in July 2017. As another example, a University Research Grant provided funding to support two environmental health faculty members and their students in collaborating with two medical laboratory science faculty members and one physics faculty member at the University to study the efficacy of ultraviolet radiation as a surface disinfection method. As a third example, an environmental health faculty member collaborated with faculty from the Department of Chemistry and School of Biological Sciences at Illinois State University and with faculty from Illinois Wesleyan University to apply to the National Science Foundation for funding to purchase a new liquid chromatography-mass spectrometry system. The grant request was funded at \$500,000, allowing for the purchase of a major piece of equipment that is now available to researchers across the University. Yet another member of the environmental health faculty collaborated with faculty from the Department of Agriculture at Illinois State University, faculty from Illinois Wesleyan University, and faculty from Heartland Community College to secure research funding exceeding \$1 million from the U.S. Department of Energy and the National Science Foundation.

Continue to enhance undergraduate student research programs. Environmental health faculty members have been highly successful involving students in research since the last program review. Faculty members have mentored multiple students in conducting research projects. Those collaborations have resulted in presentations by students at the annual University Research Symposium and publications in peer-reviewed journals in the discipline.

Work to improve student participation in the University's Honors Program. During this past program review cycle the number of environmental health students participating in the University Honors program fluctuated. Faculty continues to encourage academically strong students to apply for the honors program.

Continue student retention efforts to maintain optimum enrollment. Efforts to retain students in the environmental health program at Illinois State have had some success. Those efforts will continue during the next program review cycle.

Look nationally to identify peer benchmark and aspiration institutions. Through this program review process, environmental health faculty members have identified and studied benchmark and aspirational programs. From this analysis, faculty has concluded that the environmental health program at Illinois State is on par with or exceeds those programs in terms of the program quality indicators valued by faculty.

Major findings

The B.S. in Environmental Health program continues to succeed in preparing students for positions in a variety of environmental health-related fields. Demand for program graduates among prospective employers remains strong. Since the 2009-2010 program review, the environmental health program has succeeded in promoting collaborative research that involves students and in implementing improvements to the curriculum to ensure that student academic preparedness meets the needs of employers. The program has also succeeded in developing a robust assessment program that integrates feedback from student professional practice experiences, the program advisory committee, and other data sources such as student technical writing samples and video-recorded student presentations. One of the greatest needs for the program is creation of a system to better track program alumni. Information obtained from implementing such a tracking system would be used to better monitor the types of job placements and job placement rates of program graduates.

Initiatives and plans

- Continue collaborative research initiatives involving environmental health students and faculty from other units; continue to seek external funds to support those initiatives.
- Continue efforts to assess student learning outcomes and program effectiveness; those efforts should include analysis of assessment data that have already been collected to identify any opportunities for program improvements.
- Conduct a successful search in Fiscal 2018 to replace the retiring program director.
- Explore innovative outreach strategies for increasing interest in the program among high school students, especially interest in the industrial hygiene career path.
- Continue to expand the network of professional practice sites, especially for students interested in environmental protection; capitalize on increased interest on the part of municipal wastewater treatment facility staff in hiring environmental health students who complete professional practice experiences at those facilities.

PROGRAM REVIEW OUTCOME AND RECOMMENDATIONS FROM THE ACADEMIC PLANNING COMMITTEE

Review Outcome. The Academic Planning Committee, as a result of this review process, finds the B.S. in Environmental Health program to be in Good Standing.

The committee recognizes the program for its contributions to training in the discipline by providing the only undergraduate major in environmental health among Illinois colleges and universities, public or private. The committee congratulates faculty for maintaining high program standards as evidenced by accreditation of the program by the National Environmental Health Science and Protection Accreditation Council (EHAC) in 2013 for six years. The committee also recognizes the program for selection by Cabot Corporation of Illinois State University as one of only four universities in the country to participate in the Cabot Corporation post-graduate fellowship program.

Particularly noteworthy strengths of the Environmental Health program include student involvement in research outside the classroom and additional co-curricular opportunities available to students. Students are encouraged to collaborate with faculty members on their research, with some projects funded by external agencies such as the United States Department of Energy or the National Science Foundation. Students are encouraged by faculty to present their research findings locally, regionally, and nationally and to co-author articles with faculty for publication in core journals in the discipline. Original research by students in the program has been recognized in recent years by the College of Applied Science and Technology and the Chicago Local Section of the American Industrial Hygiene Association. Every student in the program must complete a professional practice experience. In addition, students are encouraged by faculty to participate in one of two registered student organizations: the Student Environmental Health Association or the Student Section of the American Industrial Hygiene Association. Both

organizations provide students opportunities to network with environmental health professionals and assist with professional workshops and conferences.

The committee recognizes faculty members for their contributions to the discipline and to the University through research and service. Faculty members have received numerous awards for scholarship and grant procurement. Much of the research conducted by faculty has involved collaboration with faculty in other disciplines at the University, such as agriculture, biological sciences, chemistry, and physics. One recent collaboration resulted in a grant used to purchase a liquid chromatography-mass spectrometry system now available to researchers university-wide. The committee recognizes the program for its strong ties to government agencies, including the Indian Health Service, and for continuing to recommend students in the program for internships or permanent positions with those agencies.

The committee commends faculty members for their continuing attention to the quality of the curriculum and for using assessment findings to make curricular changes to maintain a program that is relevant and current. Curricular changes made by faculty since the last program review include increasing emphasis on oral and written communication skills, providing additional training in temporary food service inspection to better prepare students for internships in public health, and adding coverage of root cause analysis to help improve students' decision-making skills.

The self-study report states that the program does not track trends in time-to-degree, average credits to degree, or curricular exceptions. Periodic monitoring of those data is important for determining whether the program is meeting the needs of its students with regard to on-time graduation, which, in turn, impacts the cost to students of their education. The committee asks program faculty to analyze longitudinal data regarding time-to-degree, average credits to degree, and curricular exceptions and report its findings in a follow-up report submitted by the Department of Health Sciences to the Office of the Provost by May 15, 2019. If faculty determines from its analysis that interventions are needed to improve these metrics, the committee asks faculty to include in its follow-up report a description of interventions it plans to pursue.

The committee asks faculty conducting program review self-studies to investigate aspirational programs to help faculty identify and prioritize initiatives for the subsequent program review cycle. The committee asks faculty to identify the indicators they use to evaluate program quality, identify programs nationally that excel relative to each indicator, and identify actions our program might take to meet or exceed those levels of quality. In its self-study report, Environmental Health faculty has identified four quality indicators but has identified an aspirational program for only one of the four. The committee asks faculty to complete its analysis by identifying one or more aspirational programs for each of its four quality indicators and then identifying actions faculty might take in the coming program review cycle to meet or exceed levels of quality at aspirational programs relative to each indicator. The committee asks faculty to summarize its findings in a report submitted by the Department of Health Sciences to the Office of the Provost by May 15, 2019. The committee notes that three of the four quality indicators already selected by faculty appropriately relate to initiatives identified by faculty in its self-study report: student recruitment, accreditation, and alumni tracking. Thus, findings from an expanded aspirational analysis could help guide faculty members in developing strategies for pursuing those initiatives.

Recommendations. The Academic Planning Committee makes the following recommendations to be addressed within the next regularly scheduled review cycle. In the next program review self-study report, tentatively due October 1, 2025, the committee asks the program to describe actions taken and results achieved for each recommendation.

Plan to increase enrollment and student diversity. According to the self-study report, target enrollment for the program is between 80 and 100 first majors. Since the last program review, fall census day enrollment peaked at 103 in fall 2012 but declined to 81 by fall 2017. The committee encourages efforts to stabilize program enrollment closer to the upper end of the target range. The committee encourages the program to develop and implement a plan for student recruitment and retention, including in the plan strategies for increasing enrollment by students from racial and ethnic groups traditionally underrepresented in the program and discipline. Some elements of a recruitment plan have already been identified by faculty in its self-study report, including development of recruitment materials, outreach by students already enrolled in the program to high school students in select school districts of the state, and targeted use of scholarships such as the Kris and George Byrns Environmental Health Scholarship Fund.

Adopting a recruitment and retention plan should aid faculty in allocating limited resources to strategies likely to have the greatest positive impact on enrollment.

Continue refining the student learning outcomes assessment plan. It is evident from the self-study report that Environmental Health faculty members highly value and are engaged in assessment of student learning. Since the last program review, faculty has sought guidance regarding the program from the Environmental Health Advisory Committee and from internship supervisors. In addition, faculty has piloted a pre- and post-test of students to evaluate their critical thinking skills and has used assessment findings to inform program modifications. The committee commends these efforts and encourages faculty to continue refining the assessment plan so findings from its implementation are even more useful to faculty when making program decisions. Specifically, the committee recommends refining student learning outcomes, mapping outcomes to core courses, and adopting targeted, direct assessment strategies at multiple points across the curriculum. By implementing these refinements, faculty should be able to identify points within the curriculum at which curricular modifications could have the greatest impact on improving student learning with respect to the learning outcomes. The committee cautions faculty to consider sustainability of its assessment efforts when making any changes to its assessment plan. It is not necessary to assess every learning outcome in every course every year. Staggering assessment of learning outcomes across multiple years and limiting assessment to a few points in the curriculum are methodologically-sound approaches that can yield information useful program planning. University Assessment Services staff is available to assist the program with assessment plan refinements.

Design and implement a system for tracking alumni. The committee concurs with faculty in its plan to design and implement a system for tracking program alumni and then using the system to enhance alumni networking. Faculty might use information gleaned from its aspirational program analyses to help guide development of the plan. Faculty might also consult faculty from other academic programs in the department regarding strategies used by those programs for alumni networking.

Consider seeking ABET accreditation. Given the emphasis in the program on industrial hygiene, the committee supports faculty in its decision to again consider applying for accreditation by the Accreditation Board for Engineering and Technology (ABET). As the self-study report notes, ABET accreditation would benefit program graduates by allowing them to take the Certified Industrial Hygienist examination six months sooner than graduates of programs not accredited by ABET. Obtaining ABET accreditation might also help efforts to increase program enrollment. Given interest expressed by program alumni in ABET accreditation, development and implementation of a new alumni tracking and networking system could aid the program in raising the funds needed to apply for the accreditation.

Plan for collaboration with Milner Library. The self-study report describes collaboration between faculties of the Department of Health Sciences and Milner Library in selecting research resources and services appropriate to curricula of the department. The report further indicates that some academic programs in the department have initiated discussions with library faculty to enhance that collaboration. The committee encourages Environmental Health faculty to participate in those discussions, if they have not done so already, to develop a plan for selecting and maintaining research resources needed by students and faculty in the program and for integrating information fluency instruction unique to the discipline into the curriculum.

Continue student learning outcomes assessment. The committee encourages faculty to continue its implementation of the student learning outcomes assessment plan for the program during the next program review cycle, to continue to utilize data collected through plan implementation to make program revisions as necessary, and to document how that has been done.