
**DOCTOR OF PHILOSOPHY IN PUBLIC HEALTH SCIENCES
SPECIALIZATION IN ENVIRONMENTAL HEALTH**

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Introduction

The Specialization in Environmental Health for the PhD in Public Health Sciences program at the University of Louisville School of Public Health and Information Sciences is in the Department of Environmental and Occupational Health Sciences. The specialization in Environmental Health is designed to provide scholars with the tools to conduct in-depth research and provide advanced instruction in the discipline of environmental health at the college and university level. It also prepares researchers for governmental, private, and voluntary organizations involved in environmental protection and the prevention of disease and injury. In addition to understanding advanced concepts of environmental health, industrial hygiene, and toxicology, graduates of this specialization are expected to develop skills that enable them to identify and define questions of environmental and occupational health importance, design research studies to address these questions, and to complete a program of research that demonstrates abilities as an independent investigator.

Competencies

To graduate, a student in the Specialization in Environmental Health PhD program must demonstrate the following competencies:

Competency	Demonstrated by
Critically evaluate published environmental health research	<ul style="list-style-type: none">• Presentation of articles in seminar course• Preparation of review article for seminar course• Development of NIH-style grant proposal for seminar course• Successful completion and defense of dissertation proposal• Successful completion and defense of dissertation
Develop oral and written skills for communicating results of environmental health research	<ul style="list-style-type: none">• Presentation of articles in seminar course• Preparation of review article for seminar course• Development of NIH-style

	<ul style="list-style-type: none"> grant proposal for seminar course • Successful completion and defense of dissertation proposal • Successful completion and defense of dissertation
Develop grant writing skills	<ul style="list-style-type: none"> • Development of NIH-style grant proposal for seminar course • Successful completion and defense of dissertation proposal
Perform research on a topic related to environmental health (typically includes most or all of the following: development of suitable hypothesis; selection of appropriate study design; development of proficiency in data collection methods; collection, analysis, and presentation of data; discussion of implications for public health based on knowledge gained)	<ul style="list-style-type: none"> • Conduct of dissertation research • Successful completion and defense of dissertation

Admission

An applicant who has satisfactorily completed an appropriate degree with a specialization in environmental health or an advanced degree (MD, DVM, PhD, DO) may be eligible for admission to the PhD in Public Health Environmental Health Specialization pending evaluation of appropriate training, experience, or coursework. The previous graduate work by such an applicant is reviewed on a case-by-case basis, and the applicant, if admitted, may be required to take additional course work prior to completing the minimum 39 credit-hours required for post-master's doctoral work.

The following are additionally required for admission:

Undergraduate and Graduate GPA \geq 3.0 on 4.0 scale

GRE scores from the exam taken within 5 years of expected matriculation

Although no minimum GRE scores are specified, students who have succeeded in this program have typically had GRE scores above the 50th percentile

Test of English as a Foreign Language (TOEFL) minimum score of 80 for international applicants.

Curriculum

Faculty Advisor

Upon admission to the PhD specialization, each student is assigned a faculty advisor who works with the student to develop a program of study. The program of study recognizes core elements of environmental health as well as its breadth and multidisciplinary nature. At the PhD level, this requires the selection of courses directly relevant to environmental health, such as biostatistics,

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epidemiology, molecular genetics, behavioral science, health policy/management, systems sciences, or other relevant areas of study.

Program of Study

Each doctoral student, in consultation with his or her academic advisor and the department chair, plans a program of study that uniquely fits the student's career goals. The design of a doctoral program of study that reflects each student's professional skills and research interest is the primary organizing principle of the proposed program.

Degree Requirements

The emphasis in doctoral training goes beyond accumulating course credit. Completion of the coursework is the prelude to sitting for the qualifying examination. Successful passage of the qualifying examination allows the student to enter doctoral candidacy. A doctoral candidate must then successfully develop and defend a dissertation proposal that describes an original and independent research project. Upon successful defense of the proposal, a student may then proceed to dissertation research. Upon successful completion of the research, defense of the dissertation, and demonstration of the required competencies listed above, a student is awarded the PhD degree.

The PhD specialization in environmental health is designed as a 39 credit-hour program plus dissertation. Additional hours may be needed for completion of the specialization program.

Coursework

	<i>REQUIRED COURSEWORK</i>	
<i>Course #</i>	<i>Course Title</i>	<i>Credit-Hours</i>
BIOC-645	Advanced Biochemistry I	4
BIOC-647	Advanced Biochemistry II	4
BIOC-668	Molecular Biology	4
PHEH-75X ¹	Seminars in Environmental Health	4
PHEP-602	Epidemiological Methods	3
PHST-620	Introduction to Statistical Computing	3
PHST-680	Biostatistical Methods I	3
PHTX-625	Scientific Writing	2
	Elective Courses ²	12
Degree Total		39

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¹ PHEH 750, 751, 752, 754: Students are required to complete the four seminars in environmental health for a total of 4 credit-hours but will continue to participate in the seminars until completion of their degree. Courses are jointly taught by the department faculty and are designed for a collegial experience providing an opportunity to integrate learning from other courses, discuss hot topics, brain-storm about research ideas, and acquire professional skills in scientific manuscript and grant writing, oral and poster presentations, and peer-review.

² Students who have not received a Master of Public Health (MPH) degree from a CEPH accredited U.S. School of Public Health are required to take PPHH-523 Public Health in the U.S. as one of their elective courses.

Electives

As a part of the approved program of study, a student has the option to select twelve credit-hours of elective coursework. Courses directly relevant to environmental health are preferred, including, but not limited to, biostatistics, bioinformatics, epidemiology, medical geography, molecular or population genetics, toxicology, microbiology, health services research, outcomes research, and health promotion and behavior. Courses may be selected from those offered within the School of Public Health and Information Sciences, other departments within the university, or from sources outside the university with permission and acceptance of credit by the program and dean.

Because the need for specific research methods and statistics skills varies by research topic, requirements in these area are difficult to define explicitly for all students. The student's program of study utilizes electives to provide the student with the courses needed in his or her particular case.

A student may petition to take courses not on this list with approval of the instructor and the chair of the department. The student must provide a written rationale for the choices of elective coursework in his or her program of study.

<i>APPROVED ELECTIVES</i>		
<i>Course #</i>	<i>Course Title</i>	<i>Credit Hours</i>
PPHH-523	Public Health in the U.S.	2
PHEH-753	Independent Study in Environmental and Occupational Health	1-6
PHST-650	Advanced Topics in Biostatistics	1-3
PHST-681	Biostatistical Methods II	3
PHPB-650	Advanced Topics in Health Promotion and Behavioral Sciences	1-3
PHMS-650	Advanced Topics in Health Management and Systems Sciences	3
BIOC-611	Advanced Techniques in Biochemistry and Molecular Methods	4
BIOC-630	Responsible Conduct of Research: Survival Skills and Research Ethics	1-4
BIOC-640	Principles of Biochemistry	5
BIOC-667	Cell Biology	3
BIOC-668	Molecular Biology and Genetics	4
BIOC-675	Cancer Biology	4
BIOL-522	Aquatic Ecology	4
BIOL-562	Ecosystem Ecology	3

APPROVED ELECTIVES		
Course #	Course Title	Credit Hours
BIOL-563	Population and Community Ecology	3
BIOL-660	Advanced Ecology of Urban and Suburban Landscapes	4
CEE-573	Groundwater Hydrology	3
CEE-674	Water Resources Systems	3
CEE-675	Surface Water Quality Modeling	3
CHE-509	Environmental Processes and Systems	3
CHE-533	Chemical Engineering Safety and Health	3
CHE-534	Industrial Waste Management	3
CHE-535	Pollution Prevention	3
EXP-600	Physiology of Exercise	3
EXP-605	Human Physiology	3
GEOG-522	GIS and Public Health	3
GEOG-531	GIS and Urban Demographic Analysis	3
GEOG-561	Urban Environmental Quality	3
GEOG-656	Advanced Spatial Statistics in Applied Geography	3
GEOS-564	Hydrology	3
GEOS-565	Natural Hazards	3
MBIO-601	Molecular Microbiology	2
MBIO-602	Immunology	3
MBIO-604	General Virology	1
MBIO-618	Topics in Advanced Microbiology	1-3
MBIO-631	Basic Microbiology and Immunology	5
MBIO-687	Microbial Pathogenesis	2
MBIO-689	Microbiota in Health and Disease	2
PHTX-618	Topics in Pharmacology & Toxicology	1-12
PHTX-631	Risk Assessment	1
PHTX-641	Pharmacology I	3
PHTX-643	Toxicology I	3
PHTX-661	Molecular Mechanisms of Toxicology	3
PHZB-605	Systemic Physiology I	5
PHZB-611	Advanced Human Cardiovascular Physiology	3
UPA-678	Land Use and Planning Law	3
UPA-679	Environmental Policy	3
UPA-687	Environmental Policy and Natural Hazards	3

Qualifying Examination

Upon completion of the majority of the required coursework for the PhD (typically after the second year of coursework), the student is eligible to sit for the doctoral qualifying examination. The timing and eligibility for the qualifying examination is determined by the student's faculty advisor and department chair. Students must take the exam within three months of the completion of all courses for the PhD program. A student who does not successfully complete the exam may be required to take additional or remedial coursework. A student who fails the exam on the first attempt is allowed one opportunity to retake the exam no more than six months

after the initial exam at a date mutually agreed upon by the faculty and student. Failure on the second attempt is grounds for dismissal from the program. Successful completion of the examination admits the student to doctoral candidacy (DOCT 600) until the completion of their dissertation.

Dissertation

A dissertation is required of a candidate for the degree of Doctor of Philosophy in Public Health Sciences with a Specialization in Environmental Health. It is to be a scholarly achievement in research, and should demonstrate a thorough understanding of research techniques in environmental health and the ability to conduct independent research. The dissertation must follow the guidelines of the School of Interdisciplinary and Graduate Studies (SIGS) located at <http://louisville.edu/graduate/current-students/thesis-dissertation-information>.

Dissertation Committee

The dissertation shall be reviewed by a reading committee, chaired by the student's faculty advisor, and appointed by the dean upon the advice of the chair of the department. If the faculty advisor has a primary appointment outside EOHS, the EOHS department chair will co-chair the committee. This committee shall consist of a minimum of four members, and must include at least two members with primary appointment in EOHS and at least one member with a primary appointment outside EOHS. The dissertation must be approved by the committee and the chair of the department.

Dissertation Proposal

A student who successfully completes the qualifying exam must submit to all members of the dissertation committee a written dissertation proposal describing the proposed research in NIH grant proposal format. The student is then orally examined on the dissertation proposal.

Dissertation Preparation

The dissertation is to be prepared in format and binding according to the guidelines established by the School of Interdisciplinary and Graduate Studies (SIGS), available at <http://louisville.edu/graduate/current-students/thesis-dissertation-information>.

Dissertation Approval

The dissertation is to be submitted in completed form to the chair of the department at least thirty days before the end of the term in which the candidate expects to be graduated. The candidate is not eligible for final examination until the dissertation has been accepted by the committee and chair. The dissertation committee schedules an oral defense by the candidate and notifies SIGS using the form available at <http://louisville.edu/graduate/current-students/thesis-dissertation-information>. The time and place for the defense is published by SIGS to the general academic community, members of which are free to attend the defense. The dissertation is assessed by a standardized rubric and is approved by a majority vote of the committee and the concurrence of the department chair.

Dissertation Submission

The following steps must be taken to submit the final copy of the dissertation electronically after oral defense and approval of the committee:

1. The final document must be converted to a PDF (following the guidelines as noted above) and sent to SIGS and the department's administrative assistant.
2. The document is submitted as advised by the School of Interdisciplinary and Graduate Studies through the ThinkIR repository. [Click here to download instructions on this process.](#)
3. The signature page within the electronic version must have the names of your committee members typed under the signature line; the signatures cannot be scanned into the document.
4. The completed signature page is submitted on white paper, with original signatures, to the School of Interdisciplinary and Graduate Studies, attention SIGS Coordinator of Academic Services .

Accreditation

The School of Public Health and Information Sciences is accredited by the Council on Education for Public Health (CEPH).

The University of Louisville is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC).

For more information, see the [School's accreditation webpage](http://louisville.edu/sphis/accreditation) (<http://louisville.edu/sphis/accreditation>).

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Program Data and History

Program Data	
Name	Doctor of Philosophy in Public Health Sciences, Specialization in Environmental Health
Degree	Ph.D.
Department	Environmental and Occupational Health Sciences
Unit	School of Public Health and Information Sciences
Version	2015.06.30-06

Program History				
Version	Submitted	Approved	Change Summary	Author(s)
2006.11.14	12/04/06	12/19/06	<ul style="list-style-type: none"> Initial version 	
2007.02.21	01/25/07	02/22/07	<ul style="list-style-type: none"> Reduction of seminar from 9 to 3 credit hours Seminar divided into 3 linked courses over 3 semesters Reduction in total credit hours from 49 to 43 Rearrangement of dissertation research Removal of permission prior to candidacy 	
2007.02.21-1	07/18/07	07/18/07	<ul style="list-style-type: none"> Prefix PHKC changed to PHPB 	
2007.02.21-2	07/20/07	07/20/07	<ul style="list-style-type: none"> Reformatted and reorganized to match template Dissertation research credit hours moved out of candidacy 	
2007.02.21-2	02/26/08	02/26/08	<ul style="list-style-type: none"> PHEH-753 added to list of electives 	
2009.03.03	04/08/09	04/20/09	<ul style="list-style-type: none"> Reduced required credit hours from 43 to 37 by eliminating dissertation research and adding an elective Edited to comply with university style guide Adjusted for changes resulting from closing of Graduate School Fixed typos 	
2009.03.03-1	08/07/09	08/07/09	<ul style="list-style-type: none"> Minor editing regarding SIGS 	
2012.10.24	10/24/2012	10/24/2012	<ul style="list-style-type: none"> Required coursework extensively revised Required credit hours increased from 37 to 38 Changed "concentration" to "specialization" per CPE requirements 	
2012.10.24-01	07/08/15	07/08/15	<ul style="list-style-type: none"> Added accreditation section 	Dr. Peter L. Walton
2015.06.30	06/30/2015	[02/09/16]	<ul style="list-style-type: none"> Increased required credit hours from 38 to 39 Increased seminar requirement from 3 to 4 credits Updated dissertation links to SIGS and submission info [This version was held in the EOHS admin office since July, 2015. Sent to Deputy Director for Academic Affairs, Feb. 9, 2016] 	
2015.06.30-01	03/17/2016	03/17/2016	<ul style="list-style-type: none"> Updated Thesis Distribution information and link to SIGS dissertation guidelines. 	C. Winton Reynolds
2015.06.30-02	08/10/16	08/10/16	<ul style="list-style-type: none"> Under "Approved Electives:" updated various course names and numbers; deleted obsolete courses. Updated Program Director to Gary Hoyle, PhD 	Gary Hoyle; C. Winton Reynolds
2015.06.30-03	3/28/2017	4/14/2017	<ul style="list-style-type: none"> Minor editorial corrections 	Gary Hoyle; C. Winton Reynolds
2015.06.30-04	4/17/17	4/17/17	<ul style="list-style-type: none"> Removal of minimum GRE score under admissions requirements 	Gary Hoyle
2015.06.30-05	5/18/18	5/22/18	<ul style="list-style-type: none"> Under "Approved Electives:" Replaced or deleted obsolete courses and updated credit hours where appropriate. 	Gary Hoyle C. Winton Reynolds

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<i>Program History</i>				
<i>Version</i>	<i>Submitted</i>	<i>Approved</i>	<i>Change Summary</i>	<i>Author(s)</i>
2015.06.30-06	9/18/18	11/5/18	<ul style="list-style-type: none"> • Revision of competencies and how they are assessed • Under admission requirements, the minimum GRE score requirement has been replaced by the type of language recommended by SIGS • Added minimum TOEFL score of 80 for international students • Addition of requirement to take PPHP-523 for students without an MPH from an accredited U.S. School of Public Health • Update of elective courses. Addition of PPHP-523 Public Health in the U.S. and BIOC-630 Responsible Conduct of Research • Change in composition of dissertation committees to require at least two members with primary appointment in EOHS • Addition of standardized rubric assessment for evaluating the dissertation and defense • Approved by SPHIS: 10/19/18 • Approved by provosts office: 11/5/18 	Gary Hoyle