In greater detail, a PhD student must specifically demonstrate:

- Explain the evolving paradigms of epidemiological theory and study design and their impact on public health services
- Critically evaluate scientific literature on an epidemiologic problem to identify strengths and limitations, biases and gaps in knowledge
- Formulate epidemiologic research questions and testable hypotheses
- Apply epidemiologic study designs for specific research hypotheses
- Apply computer software for data management and analysis
- Design and apply methods for data collection and management for epidemiologic research
- Apply advanced quantitative methods to analyze an epidemiologic problem
- Integrate cross-disciplinary knowledge from molecular to population levels to make appropriate causal inferences
- Communicate in written and oral presentations epidemiologic concepts and findings to diverse audiences
- Demonstrate mastery of a substantive area of epidemiology
- Complete a hypothesis-based epidemiologic research study suitable for publication in a peer-reviewed journal

In greater detail, a PhD student must specifically demonstrate:

- In-depth knowledge of the history and philosophy of epidemiology
- Mastery of experimental and observational study designs and the ability to identify optimal designs for specific hypotheses
- Ability to develop and apply:
  - Questionnaires
  - Biomarkers for health status, exposure, and susceptibility
- Mastery of multivariable analytic methods for evaluating risk and prognosis
- Ability to critically evaluate the published epidemiologic research
- Expertise in one or more epidemiologic specialties such as nutritional, molecular, clinical, genetic, cancer, or chronic disease epidemiology
- Practical knowledge of issues in research management including:
  - Formation and leadership of multidisciplinary teams
  - Staffing, budgeting, tracking
  - Subject recruitment and retention
  - Data quality control and data safety management
  - Funding mechanisms and grantsmanship
  - Research ethics and regulations

Competencies are demonstrated by passage of the proficiency and candidacy examinations, by successful mentoring of master’s students or doctoral students not yet in candidacy, and by successful completion and defense of a dissertation project.
Application Deadline
Fall semester - January 1 (International applicants); February 1 (Domestic applicants).

To be competitive for available program scholarship opportunities, applicants should apply on or before March 1 for full consideration.

Spring semester - Applications are not accepted.

Summer semester - Applications are not accepted.

Program Requirements
The Public Health PhD specialization in Epidemiology is designed to consist of 49 credit hours of coursework over a minimum of two years plus one to four years for completion of the dissertation. The coursework is organized into two blocks of 26 and 23 credit hours. The curriculum outlined below represents an ideal sequence for a full-time student. A part-time student may need to deviate from this sequence. Completion of the first block of coursework is prerequisite for sitting for the proficiency examination. After passing the proficiency examination, the student can proceed with the second block of coursework. Successful completion of the second block is prerequisite to sitting for the candidacy examination.

After passing the candidacy examination, the student is admitted to 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, the student may then proceed to dissertation research. Upon successful completion of the research, oral defense of the dissertation, and demonstration of the required competencies listed above, the student is awarded the PhD degree.

Coursework
49 total credit hours (beyond admission requirements) consisting of the following:

• 20 credit hours of required courses
• 8 credit hours of seminars in Epidemiology
• 21 credit hours of elective/selective/independent study courses

Note: Students who have completed the MS degree and have been accepted to the PhD program will advance to Block 2/Year 2 of the PhD curriculum upon matriculation. These students will still be required to complete the Seminar and Content Course Electives credits listed in Block 1/Year 1.

Year 1

<table>
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<td><strong>Fall</strong></td>
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<td>PHEP 621</td>
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<td><strong>Summer</strong></td>
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Year 2

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<td>PHEP 702</td>
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Elective and Selective Coursework

**Content Course Electives** consist of courses specialized in either an exposure or disease category and offerings will vary from semester to semester based upon faculty workloads and student programs of study. These may include:

• PHEP 607 Epidemiology of Cancer
• PHEP 611 Nutritional Epidemiology
• PHEP 613 Epidemiology of Aging and Disability
• PHEP 615 Foundations of Global Maternal and Child Health
• PHEP 620 Environmental and Occupational Epidemiology
• PHEP 624 Methods in Reproductive and Perinatal Epidemiology
• PHEP 625 Child Health & Development
• PHEP 626 Introduction to Social Epidemiology

**Public Health Electives** may be an offering from another SPHIS department.

**Biostatistics Electives** should be restricted to advanced courses such as PHST 684 Categorical Data Analysis, PHST 683 Survival Analysis, or PHST 750 Statistics for Bioinformatics. These electives are subject to instructor permission. Students must discuss their choices with their advisor and rationalize them with respect to their program of study which must be approved by the Program Director.

A minimum of 26 credit hours of coursework is required before taking the Proficiency Exam.
A minimum of 50 credit hours of coursework is required before taking the Candidacy Exam.

Proficiency Examination

Upon successful completion of the first block of required coursework, the student is eligible to sit for the written proficiency examination, which is administered by a committee of departmental faculty appointed by the chair. The timing of the proficiency examination is determined by the student’s faculty advisor and the department chair. The subject matter includes basic knowledge of disease biology and pathophysiology; theory and skills in epidemiologic research methods, including study design and management; and quantitative analytic methods. A student who does not successfully pass the proficiency examination is allowed a second opportunity to pass the exam. Failing the proficiency examination the second time results in dismissal from the program.
Candidacy Examination
After passing the proficiency examination and upon completion of
the second block of coursework, the student is eligible to sit for the
written and oral candidacy examination, which is administered by
a committee appointed by the department chair and composed of
graduate faculty. The subject matter includes knowledge of advanced
epidemiologic methods; specialized knowledge pertaining to the minor
field of specialization; disease biology and pathophysiology, which may
be tailored to the student’s special area of interest; and knowledge of
the research process. Successful passage of the candidacy examination
admits the student to doctoral candidacy. A student who does not
successfully pass the candidacy examination may be required to take
additional or remedial coursework and is allowed a second opportunity
to pass the exam. Failing the candidacy examination the second time
results in dismissal from the program.

Dissertation
A dissertation is required of every candidate for the degree of Doctor of
Philosophy in Public Health Sciences, specialization in Epidemiology.
The dissertation is a scholarly achievement in research and presents an
original contribution to knowledge. It should demonstrate a thorough
understanding of research techniques in epidemiology and the ability
to conduct independent research. The following sections summarize
the basic requirements for the dissertation committee, dissertation
proposal, and defense. Additional details are available in the department’s
document “Student Advising, Thesis and Dissertation Committees.”

Dissertation Committee
The dissertation is read by a dissertation committee, chaired by the
student’s faculty advisor and appointed by the Dean of the school on the
recommendation of the program director and chair of the department.
The committee consists of at least four members and must include
one representative of an allied department. The dissertation must be
approved by the committee and the chair of the department.

Dissertation Proposal
After successful completion of the qualifying examination, a doctoral
candidate must submit a written dissertation proposal to the members of
the dissertation committee. The candidate is then orally examined on the
dissertation proposal.

Dissertation Preparation
The dissertation is prepared with the formatting according to the
guidelines of the Graduate School (http://louisville.edu/graduate/current-
students/thesis-dissertation-information/).

Dissertation Approval
The dissertation is 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, and the candidate is not eligible
for final examination until the dissertation has been received by the
committee and chair.

The dissertation committee schedules an oral defense by the candidate.
The time and place for the defense is published to the general academic
community, members of which are free to attend the defense. The
dissertation 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:

a. Final document must be converted to a PDF (following the
guidelines as noted above) and sent to the Graduate School and the
department’s administrative assistant.
b. Submit as advised by the Graduate School through the ThinkIR
repository. The directions on submission will be provided upon review
of the dissertation by the Graduate School.
c. 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.
d. Submit a signed signature page, digital/electronic signature page
(http://louisville.edu/graduate/current-students/thesis-dissertation-
information/) can be found on the Graduate School web-site.

A copy of the final, signed dissertation must also be deposited with the
department office.