Master of Science in Clinical Investigation Sciences (MSc CIS)

Program Director (Interim): J. Jackson Barnette, PhD  
Program Coordinator: Tammi Alvey Thomas  

**Introduction**

The MSc in Clinical Investigation Sciences is offered by the School of Public Health and Information Sciences. The MSc can be pursued in combination with the M.D. degree from the School of Medicine.

The MSc degree program provides physicians, dentists, nurses and other health professionals an opportunity to acquire the clinical research skills necessary for a career in an academic health center.

The MSc CIS curriculum integrates biostatistical and epidemiologic methods in a problem-based learning format with additional instruction in several other biomedical and public health topics. Students pursuing the master degree take didactic courses while they engage in mentored and independent research that culminates in the preparation of a professional paper.

**Competencies**

The successful student is able to:

- Access and critique the scientific literature.
- Address and discuss methods and issues of clinical epidemiology.
- Identify important clinical research questions and state as testable hypotheses.
- Develop collaborative clinical research studies in accordance with appropriate epidemiologic and biostatistical methodologies.
- Apply the principles of data collection, monitoring, management and analysis within the context of a multidisciplinary team.
- Disseminate study results to professional and lay audiences through oral and written communication.
- Analyze human subjects’ issues and apply ethical principles in performing and disseminating clinical research.
- Discuss and respond to the legal issues in new drug and device development.

It is expected that prior to graduation, students in the program have demonstrated these competencies by completing the curriculum, participating in a collaborative research project, and successfully writing and defending the professional paper.

**Admission**

Applicants must have completed a baccalaureate degree from an accredited institution with a minimum of 3.0 GPA on a 4.0 scale. Applicants with research experience (e.g. research coordinator) or have completed a professional degree (e.g. DMD, DO, MD) are preferred.

Application requirements are submitted to the Graduate School Office of Admissions and include:

- Formal application
- Curriculum vitae
MSc in Clinical Investigation Sciences

- Personal statement, a one-page essay that discusses the student’s background and his or her long-term goals in clinical research
- Application fee
- A minimum of two letters of recommendation
- Official transcripts of all postsecondary coursework
- Official scores on the Graduate Record Examination (GRE) General Test (if applicant does not have a doctoral degree)

For specific information about the degree program or the application process, students should contact Dr. Jack Barnette, Interim Program Director, 502-852-8674. The application for the MSc is found at: http://louisville.edu/graduate/futurestudents/apply-materials/application

Curriculum

The MSc curriculum has been designed in such a way that a fulltime student could complete the degree in one Calendar year. However, it is expected that many students will take longer than one year to complete the M. Sc.

The typical progression through the MSc curriculum is:

- Develop program of study
- Take coursework
- Select research project and begin work
- Do research project and prepare professional paper
- Present and defend research project

Faculty Advisor

The program director serves as faculty advisor for each student until the student begins his or her research for the thesis or professional paper, at which time the student selects a mentor for his or her research with the approval of the program director. The mentor may be any member of the School’s faculty or, upon approval of the program director, a mentor in the student’s laboratory or employment affiliation and assumes the functions of faculty advisor.

Program of Study

Upon matriculation in the program, each student meets with the program coordinator and develops a program of study based on the student’s time availability (e.g., typical two-year program or extended three-year program). The program of study may be modified as the student’s needs change or course availability is altered.

Award of degree from an accredited school of public health requires successful completion of the equivalent of three semester-credit hours in each of:

- Instruction that provides a broad overview of public health
- Instruction in epidemiology

Either or both of these requirements may be determined to have been met prior to matriculation by approval of the academic dean of a variance request submitted by the program director. The request for a variance in one or both requirements must be justified by one of: previous degrees received, such as an MPH, or DrPH; previous coursework successfully completed; or extensive experience in the public health workforce. In the
absence of a variance for a requirement, the coursework included in the MSc program satisfies both requirements.

**Degree Requirements**

**Coursework**

31 total credit hours of required coursework

- 19 credit hours of required coursework
- 9 credit hours of elective coursework
- 3 credit hours of mentored research

### Required Coursework

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall I</td>
<td>PHST-624</td>
<td>Clinical Trials I</td>
<td>2</td>
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<tr>
<td></td>
<td>PHMS-523</td>
<td>Public Health in the U.S.*</td>
<td>2</td>
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<tr>
<td></td>
<td>PHST-500</td>
<td>Introduction to Biostatistics for Public Health I</td>
<td>3</td>
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<td></td>
<td>PHST-631</td>
<td>Data Collection for Clinical Research</td>
<td>2</td>
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<td>Elective(s)</td>
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<td>Spring I</td>
<td>PPHP-601</td>
<td>Evaluating Health Care Literature</td>
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<td></td>
<td>PHST-501</td>
<td>Introduction to Biostatistics for Public Health II</td>
<td>3</td>
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<tr>
<td></td>
<td>PHST-632</td>
<td>Ethical Conduct of Research</td>
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<td></td>
<td>PHST-625</td>
<td>Clinical Trials II</td>
<td>2</td>
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<td></td>
<td>PHEP-614</td>
<td>Introduction to Clinical Epidemiology</td>
<td>2</td>
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<td>Elective(s)</td>
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<td>3</td>
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<td>Summer I</td>
<td>PHCI-699</td>
<td>Mentored Research</td>
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<td>Semester Total</td>
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<td><strong>Degree Total</strong></td>
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<td><strong>31</strong></td>
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</table>

**Electives:**

*Nine hours of electives from the following (other courses on approval of program advisor)*

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Semester Offered</th>
<th>Credit Hours</th>
<th>Mode of Delivery</th>
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<tr>
<td>PHST-XXX</td>
<td>Advanced Coursework in Biostatistics</td>
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<td>PHEP-XXX</td>
<td>Advanced Coursework in Epidemiology</td>
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<td>PHPB-604</td>
<td>Health Decision Risk Analysis</td>
<td>Spring</td>
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<td>PHPB-501</td>
<td>Introduction to Health Behavior</td>
<td>Fall</td>
<td>2</td>
<td>Hybrid</td>
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<td>PHPH-610</td>
<td>New Drug and Device Development</td>
<td>Fall</td>
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<td>ENGL-599</td>
<td>Advanced Academic Writing Across Disciplines</td>
<td>Spring</td>
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<td>Live</td>
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<td>CECS-536</td>
<td>Data Management and Analysis</td>
<td>Fall</td>
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<td>Live</td>
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<td>SOC-618</td>
<td>Qualitative Field Research Methods</td>
<td>Spring</td>
<td>3</td>
<td>Live</td>
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</table>

* PHMS-523 is required of students who do not have a broad exposure to public health through experience or coursework. It is offered only in the Fall. Any student who waives out of the course must replace the two semester hours with elective coursework.
Professional Paper

A professional paper, based on original research conducted by the student, is required of a candidate for the degree of master of science in clinical investigation sciences. It is to be an original work of professional quality and a scholarly achievement that demonstrates the student’s thorough understanding of research techniques in clinical research and the ability to conduct independent research.

Professional Paper Committee

The professional paper is read by a reading committee, chaired by the student’s mentor/faculty advisor, and appointed by the dean of the school upon the recommendation of the program director. This committee consists of three members, and must include one representative of an allied department. The professional paper must be approved by the committee and the program director.

Professional Paper Proposal

The proposal professional paper is to be developed in written form and presented to the committee for approval.

Professional Paper Approval

The professional paper is to be submitted in completed form to the chair of the committee at least fourteen days before the end of the term in which the candidate expects to be graduated, and the candidate is not eligible for the final oral examination until the professional paper has been accepted by the committee.

The committee schedules an oral examination of the candidate during which the student presents his or her professional paper and is asked to defend it and the supporting research. The professional paper is approved by a majority vote of the committee and by the program director.

Accreditation

The Program 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. (https://louisville.edu/sphis/accreditation)