HEALTH DATA ANALYTICS (MS)

Master of Science in Health Data Analytics
Unit: School of Public Health and Information Sciences (https://louisville.edu/sphis)
Academic Plan Codes: HEDAMS, HEDAMS_O

Program Information
This program can be completed in a traditional classroom format or entirely online (https://louisville.edu/online/programs/masters/master-of-science-in-health-data-analytics).

The Master of Science in Health Data Analytics program will educate and train public health graduate students in data analytics using the most recently developed techniques for Big Data, data mining, and algorithmic analysis.

Competencies
The MS in Health Data Analytics Program focuses on four key competencies:
1. Public health knowledge
2. Data warehouse development for health data analytics
3. Health data analytics
4. Translation of data analytics into actionable knowledge

Curriculum
The curriculum has four main components:
1. Public health foundations
2. Principles of data warehouse construction (i.e., creating Big Data from little data)
3. Advanced analytics (i.e., Big Data analytics, data mining)
4. Application of program competencies towards solving real-world problems in the MSHDA Capstone project.

Faculty Advisor
On matriculation, each student is assigned a faculty advisor and is requested to meet at least twice each semester with his or her advisor. The faculty advisor works with the student to develop a program of study and serves as academic mentor and counselor on career and employment opportunities, professional development, and opportunities beyond graduate school.

Admission Requirements
The MS program is available to students who have completed an undergraduate degree in biostatistics, statistics, mathematics, computer science or a related discipline and have competency in college-level calculus, statistics, regression analysis, as evidenced by transcripts from postsecondary institutions attended by the applicant.

This program is available to both part-time and full-time students; however, the part-time student must be cognizant that courses are offered on an alternating basis, usually every two years. Part-time students must pursue the recommended course sequence as courses are available.

The following are additional requirements for admission:

- Applicants must apply through the Centralized Application Service for Public Health (SOPHAS) (https://sophas.org).
- Graduate application submitted to the Graduate School (http://louisville.edu/graduate/apply)
- Non-refundable application fee
- At least two letters of recommendation written within past twelve months, submitted via the Graduate School (gradadm@louisville.edu)
- Students are asked to submit a current curriculum vitae (CV)
- Submission of GRE Quantitative section score to the Graduate School
- All postsecondary transcripts (requires foreign credential evaluation if not from accredited U.S. institution)
- Statement of goals (i.e., general research interests)
- Admission interviews by the HMSS Health Leadership Committee are required and are in addition to your application for admission. An interview provides the HMSS Health Leadership Committee an additional source of information and perspective about your potential fit for the University of Louisville.
- If candidate’s primary language is not English, one of the following:
  - Test of English as a Foreign Language (TOEFL) exam with a minimum score of 90 (after conversion for test type)
  - Passing an advanced level Intensive English as a Second Language program.
  - Degree from an accredited U.S. institution (requires provisional admission with evaluation of English language competency)

Program of Study
The MS in Health Data Analytics is designed to train students in fundamentals of public health, data warehouse/database creation and management, compliance with Federal codes and regulations regarding PHI, and advanced analytics skills. As a major component of this degree, students are required to complete a discovery-based project that is a thorough analysis of a selected complex data set to reveal patterns and relationships. The capstone project requires the rigorous application of multivariate techniques such as regression model building and other analyses for single and multiple groups. Students must submit a written report of their findings and write a detailed synthesis and discussion on the choice of the methodologies used in the analyses, and the meaning of the analyses.

Program Requirements
There are 41 total credit hours in this curriculum, broken down as follows:

- 35 credit hours of required coursework
- Three (3) credit hours of capstone project
- Three (3) credit hours of project management (practicum/internship)

To graduate, students must successfully complete the 41-credit hour curriculum, including the Capstone course and project, and have an overall 3.0 GPA in program coursework. All courses within the curriculum are required and there are no electives.
## Coursework

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<thead>
<tr>
<th>Year 1</th>
<th>Fall</th>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td></td>
<td>PHPH 523</td>
<td>Public Health in the United States</td>
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<tr>
<td></td>
<td>PHST 620</td>
<td>Introduction to Statistical Computing</td>
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<td>PHST 661</td>
<td>Probability</td>
<td>3</td>
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<td>PHMS 644</td>
<td>Biomedical Foundations for Health Analytics</td>
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<td><strong>Hours</strong></td>
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<td>Spring</td>
<td>PHMS 643</td>
<td>Data Management in Health Service Research</td>
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<td>PHST 662</td>
<td>Mathematical Statistics</td>
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<td>PHST 684</td>
<td>Categorical Data Analysis</td>
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<td>PHMS 639</td>
<td>Health Data Analytics Practicum</td>
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<td></td>
<td><strong>Hours</strong></td>
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<td>Year 2</td>
<td>Fall</td>
<td>PHMS 641</td>
<td>Data Mining I</td>
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<td>PHMS 682</td>
<td>Population Health Information Management</td>
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<td>PHMS 638</td>
<td>Data Security &amp; Electronic Health Records</td>
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<td>PHMS 639</td>
<td>Health Data Analytics Practicum</td>
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<td>Spring</td>
<td>PHMS 642</td>
<td>Data Mining II</td>
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<td>PHMS 636</td>
<td>Leadership in Health Information Management</td>
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<td>PHMS 637</td>
<td>MSHDA Capstone Course</td>
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<td>PHMS 639</td>
<td>Health Data Analytics Practicum</td>
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<td><strong>Hours</strong></td>
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<td><strong>Minimum Total Hours</strong></td>
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### Health Data Analytics Practicum (PHMS 639, 1-3 s.h.)

The practicum experience places the student in a non-academic environment where health data analytics are used for decision support and strategic planning. The deliverables will include 1) a written report to the instructor on the experience gained during the practicum, and 2) an outline on the activities specific to the site where the practicum is completed. The practicum should include no less than 200 contact hours at the practicum site. The manager at the practicum site will be asked to complete an evaluation of the student.

### MSHDA Capstone Course (PHMS 637, 3 s.h.)

This course is designed to provide final preparation of the student to sit for the Certified Health Data Analyst Examination offered by the Commission on Accreditation for Health Informatics and Information Management (CAHIIM) and the American Health Information Management Association (AHIMA). The certification with the MSHDA degree provides prospective employers evidence of the student’s ability to perform professional level health data analytics. This course is also intended to provide a cumulative, rigorous, and discovery-based project.

### 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 (https://louisville.edu/sphis/accreditation).