HEALTH DATA SCIENCE, M.S.

Saint Louis University's Master of Science program in health data science is designed to prepare students for a career in today's data-driven health care industry. Successful data scientists possess an artful ability to blend, synthesize and communicate data for use in clinical decisions by patients and providers, as well as advancing quality improvement efforts across health systems.

SLU's health data science curriculum and academic training complement other existing programs and course offerings at Saint Louis University, including health informatics (Doisy College of Health Sciences), biostatistics (College for Public Health and Social Justice) and biomedical informatics and computational biology (College of Arts and Sciences). Students have the opportunity to take courses from each of these programs.

Careers

Our graduates have successful careers as data scientists, data managers, data analysts, machine learning engineers, statisticians, software engineers and quantitative analysts in academia, government and industry. Students may also further their education in a doctoral program in a related field.

Key Figures

- 98 percent of students have jobs upon graduation from this program
- The median salary in relevant health data science careers is $117,217
- #2 job in the U.S., according to Glassdoor
- Third fastest-growing job in the U.S., according to LinkedIn

Curriculum Overview

SLU's M.S. in health data science aims to provide graduates with the expertise and necessary skills needed to manage, manipulate and analyze large-scale clinical and operational databases. This program is flexible enough for traditional students or working professionals. It offers the expertise and hands-on skills in analytics, modeling and outcomes research needed to meet the increasing demand for data scientists in the health care system.

Students complete 30 credits of coursework across three integrated areas of study, described below. In the final semester of the program, students complete a comprehensive three-credit hour capstone course, which provides a platform for students to integrate the skills and knowledge acquired throughout the program into a tangible real-world project.

Applied Statistics

Build capabilities to ask critical questions and draw conclusions from large, complex data with a variety of analytic methods, including predictive modeling, machine learning and data visualization. The program incorporates new software regularly to promote sharp and current analytic skills.

Practical Computing

Learn a diverse set of open-source and proprietary software required to link data from disparate sources such as electronic medical records, insurance claims, operations data, patient registries and personal health devices. This software includes R, Python, SAS, SQL and Hadoop.

Health Science Applications

Respond to the challenges of a regulated, dynamic industry by understanding unique health care contexts such as privacy protection, government financing, risk contracting, performance monitoring and population health management.

Fieldwork and Research Opportunities

The Master of Science in Health Data Science program provides traditional students and working professionals with the expertise and hands-on skills needed to meet this increasing demand in the health care systems. Focus is placed on highly sought-after skills in health data manipulation, data visualization, data mining, machine learning and predictive analytics.

Students build programming skills in R, SAS, SQL, and Python; as well as gain experience working with advanced computing tools such as Hadoop and MapReduce. This program capitalizes on the existing teaching and research strengths of our current faculty, most of whom have experience in the corporate world, in addition to academia.

Admission Requirements

Application Requirements

Begin your application for this program at gradapply.slu.edu/apply (https://gradapply.slu.edu/apply/).

- Complete Application form
- Transcripts from most recent degree(s)
- Résumé or curriculum vitae
- GRE Not Required

Requirements for International Students

All Saint Louis University admission policies and requirements for domestic students apply to international students. International students applying to SLU must also meet the following additional requirements:

- Demonstrate English language proficiency (https://catalog.slu.edu/academic-policies/office-admission/undergraduate/english-language-proficiency/)
- Academic records must include an English translation. Unofficial copies may be accepted in some cases for initial admission review, however official copies must be received prior to enrollment. Course-by-course transcript evaluations are accepted and are required in some cases.

Students must submit financial documents to be issued an I-20 for their F-1 visa application. Proof of financial support must include:

- A letter of financial support from the person(s) or sponsoring agency funding the student's time at Saint Louis University
- A letter from the sponsor's bank verifying that the funds are available and will be so for the duration of the student's study at the University

Application Deadline

Applications to the program are considered on a rolling basis. Students apply to start the program during either the fall or spring semester.

Tuition

Tuition	Cost Per Credit
Graduate Tuition	$1,450

Additional charges may apply. Other resources are listed below:

Information on Tuition and Fees (https://catalog.slu.edu/academic-policies/student-financial-services/tuition/)

Miscellaneous Fees (https://catalog.slu.edu/academic-policies/student-financial-services/fees/)

Information on Summer Tuition (https://catalog.slu.edu/academic-policies/student-financial-services/tuition-summer-current/)

Scholarships and Financial Aid

For more information about Saint Louis University scholarships and financial aid, please visit the Office of Student Financial Services (https://www.slu.edu/financial-aid/types-of-aid/).

Accreditation

Saint Louis University is accredited by the Higher Learning Commission (HLC) and has been continuously accredited since 1916.

Learning Outcomes

1. Graduates will be able to identify and define analytic/operational questions.
2. Graduates will be able to apply appropriate statistical methods.
3. Graduates will be able to apply appropriate data-management strategies.
4. Graduates will be able to critically evaluate methodological designs.
5. Graduates will be able to understand the organization and financing of health care and resulting data sets.
6. Graduates will be able to effectively communicate the results of analyses.

Requirements

Code	Title	Credits
Applied Statistics Courses		
HDS 5310	Analytics, Statistics & Visualization Methods in Health Data Science	3
HDS 5330	Predictive Modeling and Health Machine Learning	3
ORES 5160	Data Management and Programming in Healthcare	3
Practical Computing Courses		
HDS 5230	High-Performance Computing and Health Artificial Intelligence	3
HDS 5430	Image Processing and Deep Learning Diagnostics	3
HDS 5530	Natural Language Processing in Medicine	3
Health Science Applications Courses		
HDS 5000	Foundations in Health Data Science	3
HDS 5130	Healthcare Organization, Management, and Policy	3
ORES 5300	Foundations of Health Outcomes Research	3
Capstone Experience		
HDS 5960	Capstone Experience	3
or HDS 5910	Graduate Internship	
Total Credits		**30**

Continuation Standards

- Every student must maintain a 3.00 cumulative grade point average to remain in good standing in the program.
- Any course with a letter grade of C+ or below will have to be retaken. Furthermore, students should require at most two attempts to successfully complete any HCOR courses required for the degree.
- Students who fail to achieve a 3.00 GPA after completing 3 academic probation courses are reviewed by the Academic Affairs Committee for dismissal from the program.
- Students earning a grade of F may be subject to immediate dismissal upon the recommendation of the Academic Affairs Committee.

Roadmap

This roadmap is just one example of a semester-by-semester plan of study for this program. There are other plans students can and do take. The plan of study for each particular student is established in consultation with each student's academic advisor; *this roadmap does not replace academic advising appointments.*

Roadmap notes:

- This Roadmap assumes full-time enrollment unless otherwise noted.
- Courses/Milestones marked with an "!" are critical and must be completed in the semester listed in the Roadmap to ensure a timely graduation.
- Course availability and sequencing are subject to change.

Course	Title	Credits
Year One		
Fall		
HDS 5000	Foundations in Health Data Science	3
ORES 5300	Foundations of Health Outcomes Research	3
ORES 5160	Data Management and Programming in Healthcare	3
	Credits	**9**
Spring		
HDS 5310	Analytics, Statistics & Visualization Methods in Health Data Science	3
HDS 5130	Healthcare Organization, Management, and Policy	3
HDS 5330	Predictive Modeling and Health Machine Learning	3
	Credits	**9**
Year Two		
Fall		
HDS 5430	Image Processing and Deep Learning Diagnostics	3
HDS 5230	High-Performance Computing and Health Artificial Intelligence	3
	Credits	**6**
Spring		
HDS 5530	Natural Language Processing in Medicine	3

HDS 5960 or HDS 5910	Capstone Experience or Graduate Internship	3
	Credits	**6**
	Total Credits	**30**

Contact Us

For more information about this program, please call 314-977-8062 or email somanalytics@health.slu.edu (somanalytics@slu.edu).