

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 will 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

The goal of SLU's M.S. in health data science program is to provide graduates with the expertise and necessary skills needed to manage, manipulate and analyze large-scale clinical and operational databases. Most core courses are offered onsite during hours convenient for working professionals. 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, below. In the final semester of the program, students will 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 (M.S.) 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/>).

- Application form and fee
- Transcripts from most recent degree(s)
- Professional statement
- Résumé or curriculum vitae
- One Letter of Recommendation

Requirements for International Students

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

- Demonstrate English Language Proficiency (<https://catalog.slu.edu/academic-policies/office-admission/undergraduate/english-language-proficiency/>)
- Financial documents are required to complete an application for admission and be reviewed for admission and merit scholarships.
- Proof of financial support that 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
- Academic records, in English translation, of students who have undertaken postsecondary studies outside the United States must include:
 - Courses taken and/or lectures attended
 - Practical laboratory work
 - The maximum and minimum grades attainable
 - The grades earned or the results of all end-of-term examinations
 - Any honors or degrees received.

WES and ECE transcripts are accepted.

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	\$1,370

Additional charges may apply. Other resources are listed below:

Net Price Calculator (<https://www.slu.edu/financial-aid/tuition-and-costs/calculator.php>)

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/>)

Scholarships and Financial Aid

For priority consideration for graduate assistantship, apply by Feb. 1.

For more information, visit the student financial services office online at <https://www.slu.edu/financial-aid/index.php> (<https://www.slu.edu/financial-aid/>). (<https://www.slu.edu/financial-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 an analytic/operational question.
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 and Statistical Programming	3
HDS 5320	Inferential Modeling	3
HDS 5330	Predictive Modeling and Machine Learning	3
Practical Computing Courses		
HDS 5210	Programming for Health Data Scientists	3
ORES 5160	Data Management	3
HDS 5230	High Performance Computing	3
Health Science Applications Courses		

HDS 5130	Healthcare Organization, Management, and Policy	3
ORES 5300	Foundations of Outcomes Research I	3
ORES 5210	Foundations of Medical Diagnosis and Treatment	3
<i>Capstone Experience</i>		
HDS 5960	Capstone Experience	3
Total Credits		30

Continuation Standards

Students must maintain a cumulative grade point average (GPA) of 3.00 in all graduate/professional courses.

Roadmap

Roadmaps are recommended semester-by-semester plans of study for programs and assume full-time enrollment unless otherwise noted.

Courses and milestones designated as critical (marked with !) must be completed in the semester listed to ensure a timely graduation. Transfer credit may change the roadmap.

This roadmap should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor/mentor each semester. Requirements, course availability and sequencing are subject to change.

Course	Title	Credits
Year One		
Fall		
HDS 5210	Programming for Health Data Scientists	3
ORES 5160	Data Management	3
Credits		6
Spring		
ORES 5300	Foundations of Outcomes Research I	3
HDS 5310	Analytics and Statistical Programming	3
Credits		6
Summer		
HDS 5320	Inferential Modeling	3
Credits		3
Year Two		
Fall		
HDS 5330	Predictive Modeling and Machine Learning	3
HDS 5130	Healthcare Organization, Management, and Policy	3
Credits		6
Spring		
HDS 5230	High Performance Computing	3
ORES 5210	Foundations of Medical Diagnosis and Treatment	3
Credits		6
Summer		
HDS 5960	Capstone Experience	3
Credits		3
Total Credits		30