

BIostatISTICS AND HEALTH ANALYTICS, M.S.

The 21st century is the era of "big data." Every day, we create 2.5 quintillion bytes of data – so much that 90% of the data in the world today has been created in the last two years alone. It is estimated that 30% of this data comes from the health care industry. Saint Louis University's Master of Science (M.S.) in Biostatistics and Health Analytics will not only prepare students to handle this data but also apply analytic techniques to answer important research questions related to health and health care.

Program Highlights

- This program is designed for students interested in a field that combines quantitative reasoning, coding and scientific skills to solve problems in health and medicine. It is suited for those with strong quantitative abilities and a desire to apply mathematics, statistics, computer programming and data analysis to health-related issues.
- An M.S. in Biostatistics and Health Analytics can prepare students for professional biostatistical careers and provides a firm academic foundation for subsequent doctoral study in statistical science.

The field of biostatistics is a science, technology, engineering and mathematics (STEM) focus area, since the field of biostatistics is a mathematically based science. In 2006, the United States launched a program to increase the number of students who receive training in STEM areas. This program will fill the need for graduates with technical abilities to analyze data and draw inferences.

Curriculum Overview

Students take courses in public health, the theory of biostatistics, methods of biostatistics and computing. Students finish by doing a capstone project under the direction of a faculty member in the Department of Epidemiology and Biostatistics.

Two Concentrations Available

Students interested in learning skills across a broad spectrum of biostatistics and data analytics can choose the traditional biostatistics concentration. Those who want to apply their skills to geospatial data can choose the geospatial health data analytics concentration. Both programs require a core set of material on biostatistics and analytics, and then each concentration has its own requirements for completion.

Fieldwork and Research Opportunities

Students will have the opportunity to do research as part of their capstone project.

Careers

Graduates of SLU's M.S. in Biostatistics and Health Analytics will be prepared to work as biostatisticians, data scientists or data analysts. The number of students in the U.S. who have received master's degrees in biostatistics has increased by seven since 2000.

Data scientists, biostatisticians and statisticians are often rated as among the nation's top jobs, measured in salary and job satisfaction.

Admission Requirements

Applicants should have a bachelor's degree in a science-related field, such as chemistry, biology, physics, mathematics, engineering, etc., with an overall GPA of 2.5 or higher. At least one semester of calculus and one introductory statistics course are required.

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

The College for Public Health and Social Justice offers several ways to help finance graduate education. Opportunities include a limited number of merit-based scholarships and graduate research assistantships.

Awards are made to applicants with the highest combinations of GPAs and test scores who complete their applications by the priority deadlines.

For more information, visit the Office of Student Financial Services (<https://www.slu.edu/financial-aid/>).

Accreditation

Saint Louis University's College for Public Health and Social Justice is fully accredited by the Council on Education for Public Health (CEPH). To see our most recent accreditation documentation, please visit the College for Public Health and Social Justice website (<https://www.slu.edu/public-health-social-justice/>). (<https://www.slu.edu/public-health-social-justice/about/accreditation.php>)

Learning Outcomes

Learning Outcomes Common to Both Concentrations

- **Foundations:** Students should be able to apply foundational principles of probability and statistics to develop methods for estimation and hypothesis testing.
- **Analysis:** Students will apply advanced statistical methods to analyze data and make inferences to answer research questions in public health.
- **Communication:** Students will describe the process of data collection, the application of statistical methodology, and the results of statistical analysis orally and in writing.

Additional Learning Outcomes for Traditional Biostatistics Concentration

- **Data and computing:** Students will apply the appropriate software to collect, store, manage, clean and analyze data.
- **Design:** Students should be able to design experiments or data collection strategies, including sample size requirements, to answer research questions in public health.

Additional Learning Outcomes for Geospatial and Health Data Analytics Concentration

- **Data management:** Students will acquire, manage, analyze, and display geospatial health data.
- **Spatial and Spatio-temporal inference:** Students will build and analyze models to assess the health of populations across both time and geographic regions.

Requirements

Code	Title	Credits
Required Core Courses		
BST 5020	Theory of Biostatistics	3
BST 5025	Theory of Biostatistics II	3
BST 5100	Introduction to General Linear Modeling	3
BST 5400	Applied Data Management	3
PUBH 5010	Mission and Practice of Global Public Health	2
PUBH 5030	Methodological Approaches to Understanding Population Health	3
BST 5961	Master's Project	3
Concentrations		12
Select one of the following:		
Traditional Biostatistics Concentration (p. 2)		
Geospatial Health Data Analytics Concentration (p. 2)		
Elective		3
Select one course from below or from courses required for the other concentration (p. 2)		
Total Credits		35

Continuation Standards

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

Electives

Code	Title	Credits
BST 5220	Multilevel and Longitudinal Data Analysis	3
BST 5230	Bayesian Statistics	3
BST 5420	Sampling Theory and Survey Design in Public Health	3
BST 6100	Causal Inference	3
GIS 5030	Geospatial Data Management	3
SOC 5670	Spatial Demography – Applied Spatial Statistics	3
GIS 5120	Geospatial Analytics	3

Traditional Biostatistics Concentration

Code	Title	Credits
BST 5030	Statistical Programming and Study Planning: SAS	3
BST 5200	Survival Data Analysis	3
BST 5210	Categorical Data Analysis	3
BST 5500	Statistical Learning	3
Total Credits		12

Geospatial Health Data Analytics Concentration

Code	Title	Credits
GIS 5010	Introduction to Geographic Information Systems	3
BST 5600	R for Spatial Analysis	3
BST 5610	Spatial Epidemiology and Disease Mapping	3
BST 5450	Data Visualization	3
Total Credits		12

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.

Geospatial Health Data Analytics Concentration

Course	Title	Credits
Year One		
Fall		
BST 5020	Theory of Biostatistics	3
BST 5400	Applied Data Management	3
BST 5450	Data Visualization	3
Credits		9
Spring		
BST 5025	Theory of Biostatistics II	3
BST 5100	Introduction to General Linear Modeling	3
BST 5600	R for Spatial Analysis	3
PUBH 5030	Methodological Approaches to Understanding Population Health	3
Credits		12
Year Two		
Fall		
BST 5610	Spatial Epidemiology and Disease Mapping	3
PUBH 5010	Mission and Practice of Global Public Health	2
BST 5XXX	Biostatistics Elective	3
Credits		8

Spring

GIS 5010	Introduction to Geographic Information Systems	3
BST 5961	Master's Project	3
Credits		6
Total Credits		35

Traditional Biostatistics and Health Analytics Concentration

Course	Title	Credits
Year One		
Fall		
BST 5020	Theory of Biostatistics	3
BST 5400	Applied Data Management	3
BST 5030	Statistical Programming and Study Planning: SAS	3
Credits		9
Spring		
BST 5025	Theory of Biostatistics II	3
BST 5100	Introduction to General Linear Modeling	3
PUBH 5030	Methodological Approaches to Understanding Population Health	3
Credits		9
Year Two		
Fall		
BST 5200	Survival Data Analysis	3
BST 5210	Categorical Data Analysis	3
BST 5500	Statistical Learning	3
Credits		9
Spring		
BST 5961	Master's Project	3
PUBH 5010	Mission and Practice of Global Public Health	2
Elective	Biostatistics Elective chosen in consultation with mentor	3
Credits		8
Total Credits		35

Contact Us

Apply for Admission (<https://sophas.liaisoncas.com/applicant-ux/#/deeplink/programSearch/organization/6425937835738032128>)

For additional admission questions please contact:

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