

DATA SCIENCE, B.S.

The Saint Louis University Bachelor of Science in Data Science is an interdisciplinary program supported by the Department of Computer Science (<https://www.slu.edu/science-and-engineering/academics/computer-science/>) and the Department of Mathematics and Statistics (<https://www.slu.edu/arts-and-sciences/mathematics-statistics/>). SLU's curriculum is modeled upon guidelines for undergraduate programs in data science as endorsed by the American Statistical Association's Board of Directors. Classes are small and are taught by enthusiastic instructors.

Curriculum Overview

The B.S. in data science is among the most rigorous degrees offered at SLU. This program combines carefully selected computer science, statistics and mathematics courses with four semesters of practica and capstone experiences. The result is an education rooted in the fundamentals that also provides hands-on experience with cleaning, visualizing, analyzing and reporting on data. Students choose electives within the major to specialize in the computer science or statistical aspects of data science.

Fieldwork and Research Opportunities

Faculty in the data science program do research in machine learning, natural language processing, time series, topological data analysis, and in other areas of statistics, computer science and mathematics.

There are multiple research, internship and consulting opportunities for students in the data science program. Past students have done cross-disciplinary work with ArchCity Defenders, the Department of Sociology, the Department of Linguistics, Literatures, and Cultures, the Department of English and the Medical School Liver Center, while others have done work in data science itself, doing research with faculty within the Department of Mathematics and Statistics, the Department of Computer Science, and the Lincoln Lab at MIT, among others.

The SLU Data Science Club allows students to practice predictive modeling in competitions. Some competitions are hosted by SLU solely for the University's students, while others pit SLU students against students and professionals from across the world.

Careers

The McKinsey Report estimated that the United States would face a shortfall of 140,000 to 190,000 people with deep analytical skills, while also needing 1.5 million managers and analysts with the know-how to make decisions based on the analysis of big data.

The Harvard Business Review calls data scientist "the sexiest job of the 21st century," and Glassdoor has ranked data scientist as the No. 1 overall job in the U.S. in terms of the number of job openings, earning potential and career opportunities rating. Data is produced in many places, and companies need employees who can analyze the data and communicate the results. Students with a B.S. in data science will be well-positioned to work in technology, government, research and consulting fields, among others.

Admission Requirements

Begin Your Application (<https://www.slu.edu/apply.php>)

Saint Louis University also accepts the Common Application.

Freshman

All applications are thoroughly reviewed with the highest degree of individual care and consideration to all credentials that are submitted. Solid academic performance in college preparatory coursework is a primary concern in reviewing a freshman applicant's file.

To be considered for admission to any Saint Louis University undergraduate program, applicants must be graduating from an accredited high school, have an acceptable HiSET exam score or take the General Education Development (GED) test.

Transfer

Applicants must be a graduate of an accredited high school or have an acceptable score on the GED or HiSET.

Students who have attempted fewer than 24 semester credits (or 30 quarter credits) of college credit must follow the above freshmen admission requirements. Students who have completed 24 or more semester credits (or 30 quarter credits) of college credit must submit transcripts from all previously attended college(s).

In reviewing a transfer applicant's file, the Office of Admission holistically examines the student's academic performance in college-level coursework as an indicator of the student's ability to meet the academic rigors of Saint Louis University. Where applicable, transfer students will be evaluated on any courses outlined in the continuation standards of their preferred major.

International Applicants

All admission policies and requirements for domestic students apply to international students along with the following:

- Demonstrate English Language Proficiency (<https://catalog.slu.edu/academic-policies/office-admission/undergraduate/english-language-proficiency/>)
- All academic records must include an English translation. An official course-by-course transcript evaluation may be required and accepted.

Tuition

Tuition/Fee	Cost Per Year
Undergraduate Tuition	\$56,960

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

There are two principal ways to help finance a Saint Louis University education:

- **Scholarships:** Scholarships are awarded based on academic achievement, service, leadership and financial need.

- **Financial Aid:** Financial aid is provided through grants and loans, some of which require repayment.

Saint Louis University makes every effort to keep our education affordable. In fiscal year 2023, 99% of first-time freshmen and 92% of all students received financial aid (<https://www.slu.edu/financial-aid/>) and students received more than \$459 million in aid University-wide.

For priority consideration for merit-based scholarships, apply for admission by December 1 and complete a Free Application for Federal Student Aid (FAFSA) by February 1.

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

Learning Outcomes

1. Graduates will be able to use programming and other computer science skills to analyze and interact with data.
2. Graduates will be able to apply statistics to analyze data sets.
3. Graduates will be able to acquire and manage complex data sets.
4. Graduates will be able to use technical skills in predictive modeling.
5. Graduates will be able to visualize data to facilitate the effective presentation of data-driven insights.

Requirements

Data science students must complete a minimum total of **62 credits** for the major.

Course	Title	Credits
University Undergraduate Core (https://catalog.slu.edu/academic-policies/academic-policies-procedures/university-core/)		32-35
Major Requirements		
CSCI 1070	Introduction to Computer Science: Taming Big Data	3
CSCI 1300	Introduction to Object-Oriented Programming	4
CSCI 2100	Data Structures	4
CSCI 4710	Databases	3
CSCI 4750	Machine Learning	3
<i>Mathematics/Statistics Requirements</i>		
MATH 1510	Calculus I	4
MATH 1520	Calculus II	4
MATH 1660	Discrete Mathematics	3
MATH 2530	Calculus III	4
MATH 3110 or MATH 3120	Linear Algebra for Engineers Introduction to Linear Algebra	3
STAT 3850	Foundation of Statistics	3
STAT 4870	Applied Regression	3
STAT 4880	Bayesian Statistics and Statistical Computing	3
<i>Data Science Integration Requirements</i>		
DATA 1800	Data Science Practicum I	1
DATA 2800	Data Science Practicum II	1
DATA 4961	Capstone Project I	2
DATA 4962	Capstone Project II	2
<i>Major Electives</i>		12

Select four courses, must include at least two CSCI courses and at least one STAT course, from the following:

CSCI 2300	Object-Oriented Software Design
CSCI 2500	Computer Organization and Systems
CSCI 2510	Principles of Computing Systems
CSCI 3100	Algorithms
CSCI 3300	Software Engineering
CSCI 4610	Concurrent and Parallel Programming
CSCI 4620	Distributed Computing
CSCI 4740	Artificial Intelligence
CSCI 4760	Deep Learning
CSCI 4830	Computer Vision
CSCI 4845	Natural Language Processing
STAT 4800	Probability Theory
STAT 4840	Time Series
STAT 4850	Mathematical Statistics

General Electives	24-27
Total Credits	120

Continuation Standards

Students must have a minimum of a 2.00 cumulative GPA in data science major courses by the conclusion of their sophomore year, must maintain a minimum of 2.00 cumulative GPA in these courses at the conclusion of each semester thereafter, and must be registered in at least one data science course counting toward their major in each academic year (until all requirements are completed).

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		
CSCI 1070	Introduction to Computer Science: Taming Big Data [†]	3
MATH 1660	Discrete Mathematics	3
MATH 1510	Calculus I (! satisfies CORE 3200) [†]	4
CORE 1000	Ignite First Year Seminar	2
CORE 1500	Cura Personalis 1: Self in Community	1
CORE 1900	Eloquentia Perfecta 1: Written and Visual Communication	3
Credits		16
Spring		
CSCI 1300	Introduction to Object-Oriented Programming [†]	4
MATH 1520	Calculus II [†]	4

DATA 1800	Data Science Practicum I [†]	1
CORE 1600	Ultimate Questions: Theology	3
General Electives		3
Credits		15
Year Two		
Fall		
CSCI 2100	Data Structures [†]	4
MATH 2530	Calculus III	4
CORE 1200	Eloquentia Perfecta 2: Oral and Visual Communication	3
CORE 1700	Ultimate Questions: Philosophy	3
Credits		14
Spring		
STAT 3850	Foundation of Statistics	3
DATA 2800	Data Science Practicum II	1
CSCI Elective		3
MATH 3110	Linear Algebra for Engineers	3
CORE 2500	Cura Personalis 2: Self in Contemplation	0
CORE 3800	Ways of Thinking: Natural and Applied Sciences	3
General Electives		3
Credits		16
Year Three		
Fall		
CSCI 4710	Databases	3
STAT 4880	Bayesian Statistics and Statistical Computing	3
CORE 2800	Eloquentia Perfecta 3: Creative Expression	3
CORE 3400	Ways of Thinking: Aesthetics, History, and Culture	3
General Elective		3
Credits		15
Spring		
STAT 4870	Applied Regression	3
CSCI 4750	Machine Learning	3
CORE 3600	Ways of Thinking: Social and Behavioral Sciences	3
General Electives		6
Credits		15
Year Four		
Fall		
DATA 4961	Capstone Project I	2
CSCI/STAT Electives		6
CORE 3500	Cura Personalis 3: Self in the World	1
General Electives		6
Credits		15
Spring		
DATA 4962	Capstone Project II	2
CSCI/STAT Elective		3
General Electives		9
Credits		14
Total Credits		120

[†] Students must earn a C- or better.

[‡] Strongly recommended for capstone

Program Notes

- STAT 3850 Foundation of Statistics (3 cr) and CSCI 2100 Data Structures (4 cr) are crucial to this program, as they serve as prerequisites for all of the upper division STAT and CSCI courses. As such, they should be taken as soon as reasonably possible.
- Possible STAT electives include STAT 4840 Time Series (3 cr), MATH 4800 Probability Theory (3 cr) and STAT 4850 Mathematical Statistics (3 cr).
- Possible CSCI electives include CSCI 2300 Object-Oriented Software Design (3 cr), CSCI 3100 Algorithms (3 cr), CSCI 3300 Software Engineering (3 cr), CSCI 4610 Concurrent and Parallel Programming (3 cr), CSCI 4620 Distributed Computing (3 cr), CSCI 4740 Artificial Intelligence (3 cr), CSCI 4760 Deep Learning (3 cr), CSCI 4830 Computer Vision (3 cr), and CSCI 4845 Natural Language Processing (3 cr).
- At least one elective must have a STAT designator and at least two electives must have a CSCI designator.
- Twelve hours of CSCI/STAT electives are required.

Madrid

Unlock the power of data to solve real-world problems and drive innovation with a Bachelor of Science in Data Science from Saint Louis University — Madrid.

Gain in-demand skills at SLU-Madrid, including in machine learning, big data and analytics to lead the digital revolution. Whether you're passionate about technology, healthcare, finance, or beyond, a career in data science is your gateway to success.

Curriculum Overview

This data science program focuses on equipping you with the knowledge and skills to analyze, interpret, and extract meaningful insights from data. It integrates elements of computer science, mathematics and statistics with the goal of addressing real-world problems through data-driven decision-making.

Healthcare, public institutions, telecommunication, finance, marketing, social sciences, travel, environmental studies ... Today's world runs on data and with this program, you will learn the skills necessary to collect, clean, organize and analyze data.

This B.S. degree can be easily combined with another major (such as computer science) or minors (such as computer science, math and business analytics), providing you with a deeper knowledge of the foundations of this area and a global understanding of the use of data science in other disciplines.

Faculty

The faculty at Saint Louis University-Madrid are experts in their respective fields. They are internationally recognized teachers, researchers and mentors. Learn about our faculty members (<https://www.slu.edu/madrid/academics/faculty/faculty-profiles.php>), including their education, credentials, experience and contact information.

Fieldwork, Internships and Careers

Class sizes are intentionally kept small at all levels to encourage active participation, foster meaningful discussions, and make it easier for

professors to address individual learning needs. This focused approach enhances understanding, promotes collaboration, and ultimately leads to better educational outcomes. This environment and the teaching of award-winning full-time faculty and industry experts will place you in an unbeatable starting point to enter the job market.

Data science experts are highly demanded by companies worldwide. Indeed, the launch of B.S. in this field is relatively new, so far CS/math graduates have filled these positions. Consequently, companies would be bidding for you as an expert in data science.

As a graduate in data science you have a wide range of career opportunities across various (any) industries like data scientist, data analyst, machine learning engineer, business analyst or artificial intelligence analyst.

You will also have opportunities to do internships in Spanish companies, putting your theoretical knowledge to work.

Admission

SLU-Madrid Application (<https://www.slu.edu/madrid/apply.php>)

Application Deadlines

- May 1 - Fall admission (Aug. 1 for EU students)
- Sept. 1 - Spring admission (Dec. 1 for EU students)
- March 1 - Summer sessions (for applicants who require a student visa)
- April 15 - Summer sessions (for applicants who do not require a student visa)

Contact Us

Office of Admissions

Avenida del Valle, 34

28003 Madrid, Spain

P. (+34) 91 554 58 58

admissions-madrid@slu.edu

Office Hours: Mondays through Fridays: 9 a.m. to 6 p.m. (3 p.m. on

Fridays from May 15 – Sept. 1)

Tuition and Fees

SLU-Madrid is committed to providing a quality Jesuit education at an affordable price. Tuition rates at the Madrid campus are approximately 40% lower than at comparable private universities in the U.S.

If you have questions or would like to speak with a financial aid officer, email us at financialaid-madrid@slu.edu.

- Tuition and Fees (<https://www.slu.edu/madrid/admissions/tuition-fees.php>)
- Scholarships and Financial Aid (<https://www.slu.edu/madrid/admissions/scholarships-financial-aid.php>)

2+SLU

2+SLU programs provide a guided pathway for students transferring from a partner institution.

Data Science, B.S. (STLCC 2+SLU) (<https://catalog.slu.edu/academic-policies/office-admission/undergraduate/2plusslu/stlcc/data-science/>)

Contact Us

For additional information about this program, please contact mathstat@slu.edu or call 314-977-2444.