

Statistical Science and Data Analytics

Learn more about the Bachelor of Science in Statistical Science and Data Analytics.

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<https://www.fox.temple.edu/faculty-research/academic-areas/statistics-operations-and-data-science/>

The Statistics, Operations, and Data Science Department offers the Bachelor of Science (B.S.) in Statistical Science and Data Analytics. The recent Best Jobs list compiled by CareerCast (a Local and National Job search company) ranks Data Scientist as No. 1 in their list of the best jobs with high demand. As we survey representatives from different companies, the consistent message we receive is that the cost of hiring and the demand for talent are skyrocketing. The demand is driven by the proliferation of computing technology, software and statistical tools for capturing and interpreting the substantial volume of data now available at the enterprise, government and personal levels.

The educational objective of the program is to provide graduates with a rigorous and broad-based curriculum providing:

1. Rigorous quantitative foundation;
2. Alignment and coordination with the established quantitative disciplines at Fox and at Temple University;
3. Exposure to programming and modern languages such as Python, R, and SAS, including preparation for future SAS certification exams, after obtaining the Basics SAS certificate during the program; and
4. Effective communication skills.

The major areas of employment mentioned in the report are: decision-making in business, healthcare, policy, as well as in social media, and commercial areas. In these areas, there are large bodies of data accumulated over the internet in need of being explored, understood, and analyzed. Statisticians will also be increasingly needed in the pharmaceutical industry. Biostatisticians will be needed to conduct the research and clinical trials necessary for companies to obtain approval for their products from the Food and Drug Administration. Another area of employment for statisticians is the government, where policy analysis is needed more and more. There is also growth projected for future graduates in statistics in research and development in the physical, engineering, and life sciences, where statisticians' skills in designing tests and assessing results are highly useful.

Reputable national organizations, like the American Statistical Association (ASA), endorse the value of undergraduate programs in statistics as a reflection of the increasing importance of the discipline. Statistics programs should be flexible enough to prepare bachelor's graduates to either be functioning statisticians in a service-oriented economy or go on to graduate school. The ASA guidelines for curriculum development address required changes in curriculum and suggest pedagogy in response to the strong upward demand for statisticians. Institutions need to ensure students entering the work force or heading to graduate school have the appropriate capacity to "think with data" and to pose and answer statistical questions.

Minor

Skilled users of data enhance their career opportunities. Students in any major who wish to become proficient in the ability to select, utilize, and apply quantitative and data analysis skills can pursue a minor in Statistics & Data Science. Courses cannot be used to meet minor requirements if already used to meet the requirements for a major or a different minor. Requirements for the minor must be completed prior to graduation.

Summary of Requirements

University Requirements

All new students are required to complete the university's General Education (GenEd) curriculum.

Note that students not continuously enrolled who have not been approved for a Leave of Absence or study elsewhere must follow University requirements current at the time of re-enrollment.

College Requirements

Students must meet College Graduation Requirements for the Bachelor of Science, including the requirements of the major listed below. Students must attain an overall GPA of 2.0 and a 2.0 GPA in the major to graduate as a Statistical Science and Data Analytics major.

Core Requirements

Code	Title	Credit Hours
BA 2104	Excel for Business Applications	1
ECON 1101 or ECON 1901	Macroeconomic Principles Honors Macroeconomic Principles	3
ECON 1102 or ECON 1902	Microeconomic Principles Honors Microeconomic Principles	3
HRM 1101 or HRM 1901	Leadership and Organizational Management Honors Leadership and Organizational Management	3
MATH 1041 or MATH 1941	Calculus I Honors Calculus I	4
MATH 1042 or MATH 1942	Calculus II Honors Calculus II	4
STAT 2103 or STAT 2903	Statistical Business Analytics Honors Statistical Business Analytics	4
ACCT 2101 or ACCT 2901	Financial Accounting Honors Financial Accounting	3
BA 2196 or BA 2996	Business Communications Honors Business Communications	3
CIS 1051	Introduction to Problem Solving and Programming in Python	4
CIS 1068	Program Design and Abstraction	4
MKTG 2101 or MKTG 2901	Marketing Management Honors Marketing Management	3
RMI 2101 or RMI 2901	Introduction to Risk Management Honors Introduction to Risk Management	3
Total Credit Hours		42

Major Requirements

Students must follow the Major Requirements and College Requirements current at the time of declaration. Students not continuously enrolled who have not been approved for a Leave of Absence or study elsewhere must follow University, College, and Major requirements current at the time of re-enrollment.

Requirements of Statistical Science and Data Analytics Major

Code	Title	Credit Hours
STAT 2501	Quantitative Foundations for Data Science (spring only)	3
STAT 2512	Intermediate Statistics	3
STAT 2521	Data Analysis and Statistical Computing	3
STAT 2522	Survey Design and Sampling (spring only)	3
STAT 2523	Design of Experiments and Quality Control (fall only)	3
STAT 3502	Regression and Predictive Analytics (fall only)	3
STAT 3503	Applied Statistics and Data Science	3
STAT 3504	Time Series and Forecasting Models (fall only)	3
STAT 3505	Introduction to SAS for Data Analytics (spring only)	3
STAT 3506	Nonparametric and Categorical Data Analysis (fall only)	3
STAT 4596	Capstone: Statistical Science and Data Analytics (spring only)	3
Focus Area		
Select one set from the following:		6-8
ACCT 2102 & FIN 3101	Managerial Accounting and Financial Management	
CIS 1166 & CIS 2109	Mathematical Concepts in Computing I and Database Management Systems	

HCM 3501 & HCM 3502	Introduction to Health Services Systems and Healthcare Financing and Information Technology
MKTG 3508 & MKTG 3509	Digital Marketing and Customer Data Analytics
MSP 1011 & MSP 1701 or MSP 2141	Introduction to Media Theory and Introduction to Media Production Media Research
MSOM 3101 & SCM 3515 or SCM 3516	Operations Management and Principles of Supply Chain Management Transportation and Logistics Management

Total Credit Hours**39-41**

Suggested Academic Plan

Bachelor of Science in Statistical Science and Data Analytics

Requirements for New Students starting in the 2022-2023 Academic Year

Please note that this plan is suggested only, ensuring prerequisites are met.

Year 1		Credit Hours
Fall		
MATH 1041	Calculus I (waives GenEd Quantitative Literacy requirement)	4
BA 2104	Excel for Business Applications	1
ECON 1102	Microeconomic Principles	3
HRM 1101	Leadership and Organizational Management	3
ENG 0802, 0812, or 0902	Analytical Reading and Writing [GW]	4
Term Credit Hours		15
Spring		
MATH 1042	Calculus II	4
STAT 2103	Statistical Business Analytics	4
ECON 1101	Macroeconomic Principles	3
IH 0851 or 0951	Intellectual Heritage I: The Good Life [GY]	3
GenEd Breadth Course		3
Term Credit Hours		17
Year 2		
Fall		
STAT 2521	Data Analysis and Statistical Computing	3
ACCT 2101	Financial Accounting	3
BA 2196	Business Communications [WI]	3
CIS 1051	Introduction to Problem Solving and Programming in Python	4
IH 0852 or 0952	Intellectual Heritage II: The Common Good [GZ]	3
Term Credit Hours		16
Spring		
STAT 2501	Quantitative Foundations for Data Science	3
STAT 2522	Survey Design and Sampling	3
CIS 1068	Program Design and Abstraction	4
MKTG 2101	Marketing Management	3
RMI 2101	Introduction to Risk Management	3
Term Credit Hours		16
Year 3		
Fall		
STAT 2523	Design of Experiments and Quality Control	3
STAT 3502	Regression and Predictive Analytics	3
Focus Area Elective ¹		3

GenEd Breadth Course		3
GenEd Breadth Course		3
Term Credit Hours		15
Spring		
STAT 3503	Applied Statistics and Data Science	3
STAT 3505	Introduction to SAS for Data Analytics	3
STAT 2512	Intermediate Statistics	3
GenEd Breadth Course		3
GenEd Breadth Course		3
Term Credit Hours		15
Year 4		
Fall		
STAT 3504	Time Series and Forecasting Models	3
STAT 3506	Nonparametric and Categorical Data Analysis	3
GenEd Breadth Course		3
GenEd Breadth Course		3
Free Elective		3
Term Credit Hours		15
Spring		
STAT 4596	Capstone: Statistical Science and Data Analytics [WI]	3
Focus Area Elective ¹		3
Free Elective		3
Free Elective		4
Term Credit Hours		13
Total Credit Hours:		122

¹ See Requirements (p. 1) section for list of Focus Area courses.