

BACHELOR OF SCIENCE

Statistics, the science of learning from data, has become increasingly important as scientists, businesses, and governments rely more and more on data-driven decision-making. Statisticians work in many areas, including business, economics, medicine, epidemiology, agriculture, environmental sciences, sports, and all aspects of government. With the increasing digitization and networking of society, data have become ever more ubiquitous, further expanding the demand for statisticians and their expertise in the collection and analysis of data.

About this Program

- **College:** Liberal Arts and Sciences (<http://catalog.ufl.edu/UGRD/colleges-schools/UGLAS/>)
- **Degrees:** Bachelor of Arts (http://catalog.ufl.edu/UGRD/colleges-schools/UGLAS/STA_BA_BS/STA_BA/) | Bachelor of Science (p. 1)
- **Credits for Degree:** 120
- **Contact:** Email (dathien@stat.ufl.edu?Subject=Statistics%20Major)
- **More Info**

To graduate with this major, students must complete all university, college, and major requirements.

Department Information

The mission of the Department of Statistics is to provide its students with a fundamental understanding of statistical reasoning and methodology, to train them to apply this knowledge to the collection and analysis of data, and to prepare them for careers in a highly technological society in which science and decision-making are increasingly driven by a rapid expansion in the quantity and availability of data.

Website (<https://stat.ufl.edu/>)

CONTACT

Email (staff@stat.ufl.edu) | 352.392.1941 (tel) | 352.392.5175 (fax)

P.O. Box 118545

102 GRIFFIN-FLOYD HALL

GAINESVILLE FL 32611-8545

Map (<http://campusmap.ufl.edu/#/index/0010>)

Curriculum

- Actuarial Science Minor
- Combination Degrees
- Data Analytics Certificate
- Data Science
- Statistics
- Statistics Minor

Statistics majors learn how to design studies that effectively address the purpose of a research project and how to properly analyze the data collected in such studies. Core courses cover statistical methods applicable in a wide variety of settings (e.g., regression and design of experiments) as well as the conceptual and mathematical foundations of statistics. Other courses explore specific data types often encountered in practical settings. Statistics majors have the option to minor in actuarial science, a profession involving the statistical and financial practices of insurance.

Students who wish to major in statistics must consult a department advisor early in their programs.

Degrees

The College of Liberal Arts and Sciences offers the Bachelor of Science and the Bachelor of Arts in statistics.

Bachelor of Arts

Intended for students who wish to pursue a career in the field of statistics or to teach statistics at the secondary-school level, but who do not currently contemplate graduate study in statistics.

Bachelor of Science

Intended for students who wish to pursue graduate study in statistics or a closely related area, and for other strong students with a deeper interest in the mathematical foundations of statistics.

Coursework for the Major

Required Coursework for Both Degrees

The B.A. in statistics requires a minimum of 42 credits in statistics and related coursework. The B.S. in statistics requires a minimum of 49 credits in statistics and related coursework. It is important that the prerequisites of each class are met before the class is attempted.

Students must receive minimum grades of C within two attempts (including withdrawals) in every required core course and in every course counted toward the 12 credit elective requirement, with the exception of MAC 2312 and MAC 2313 where students must receive a minimum grade of B-. Students cannot retake core or statistics elective courses after earning a minimum grade of C, with the exception of MAC 2312 and MAC 2313, in which students must receive a minimum grade of B-. A minimum GPA of 2.0 must be achieved on all attempts of core and major elective courses and 2.67 on MAC 2312 and MAC 2313. The grades from all attempts to satisfy core requirements will be used to compute the minimum GPA. A minimum of 18 credits of major coursework must be taken at UF, including a minimum of 12 credits of core coursework.

Code	Title	Credits
Core		
Select one:		12
MAC 2311 & MAC 2312 & MAC 2313	Analytic Geometry and Calculus 1 and Analytic Geometry and Calculus 2 and Analytic Geometry and Calculus 3	
MAC 3472 & MAC 3473 & MAC 3474	Honors Calculus 1 and Honors Calculus 2 and Honors Calculus 3	
STA 3100	Programming With Data in R	3
STA 4210	Regression Analysis ¹	3
STA 4211	Design of Experiments ^{1,2,4}	3
STA 4321	Introduction to Probability ¹	3
STA 4322	Introduction to Statistics Theory ^{1,3}	3
STA 4504	Categorical Data Analysis	3
Statistics Electives		
Select two:		6
STA 4222	Sample Survey Design	
STA 4241	Statistical Learning in R	
STA 4273	Statistical Computing in R	
STA 4502	Nonparametric Statistical Methods	
STA 4702	Multivariate Statistical Methods	
STA 4712	Introduction to Survival Analysis	
STA 4821	Stochastic Processes	
STA 4853	Introduction to Time Series and Forecasting	
STA 4930	Special Topics	
Total Credits		36

¹ The course sequences, STA 4210-STA 4211 and STA 4321-STA 4322 should be completed by the end of the junior year.

² Prerequisite: STA 4210.

³ Prerequisite: STA 4321.

⁴ Students pursuing the major must enroll in the restricted to STA majors only section of STA 4211.

Combination Degree Program

Superior students can earn both the bachelor's and master's degrees in a shorter time than typically would be possible by counting up to 12 credits of approved graduate courses toward both degrees. For information and application, contact the undergraduate or graduate coordinator.

Relevant Minors and/or Certificates

Statistics majors may want to consider a minor in actuarial science, which prepares students for careers as actuaries. Required courses cover the material for the beginning examinations and VEE credits leading to an associateship in the major national actuarial societies.

Bachelor of Science

The B.S. is intended for students who wish to pursue graduate study in statistics or a closely related area, and for other strong students with a deeper interest in the mathematical foundations of statistics.

Additional Required Coursework for B.S.

Code	Title	Credits
Core		
MAS 4105	Linear Algebra 1 ¹	4
MHF 3202	Sets and Logic	3
Math and Science Electives		
Select two:		6
MAA 4102 or MAA 4211	Introduction to Real Analysis 1 Real Analysis and Advanced Calculus 1	
MAA 4103 or MAA 4212	Introduction to Real Analysis 2 Real Analysis and Advanced Calculus 2	
MAA 4402	Functions of a Complex Variable	
MAD 4401	Introduction to Numerical Analysis	
MHF 4102	Elements of Set Theory	
Statistics Electives (select two):		6
STA 4222	Sample Survey Design	
STA 4241	Statistical Learning in R	
STA 4273	Statistical Computing in R	
STA 4502	Nonparametric Statistical Methods	
STA 4702	Multivariate Statistical Methods	
STA 4712	Introduction to Survival Analysis	
STA 4821	Stochastic Processes	
STA 4853	Introduction to Time Series and Forecasting	
STA 4930	Special Topics	
Total Credits		19

¹ Prerequisite: MHF 3202.

Critical Tracking

Critical Tracking records each student's progress in courses that are required for progress toward each major. Please note the critical-tracking requirements below on a per-semester basis.

For degree requirements outside of the major, refer to CLAS Degree Requirements: Structure of a CLAS Degree.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites (<http://www.flvc.org/cpp/displayRecord.jsp?cip=270501&track=01>) may be used for transfer students.

Semester 1

- 2.0 UF GPA required

Semester 2

- Complete MAC 1147 or higher-level calculus
- 2.0 UF GPA required

Semester 3

- Complete MAC 2311
- 2.0 UF GPA required

Semester 4

- Complete MAC 2312 with a 2.5 critical-tracking GPA
- 2.0 UF GPA required

Semester 5

- Complete MAC 2313 and STA 3100 with a 2.5 critical-tracking GPA
- 2.0 UF GPA required

Semester 6

- Complete MHF 3202 and STA 4210 and STA 4321
- 2.0 UF GPA required

Semester 7

- Complete MAS 4105 and STA 4211 and STA 4322
- 2.0 UF GPA required

Semester 8

- Complete STA 4504 and all remaining Statistics and Math and Sciences electives
- 2.0 UF GPA required

Model Semester Plan

Students are expected to complete the writing requirement while in the process of taking the courses below. Students are also expected to complete the general education international (GE-N) and diversity (GE-D) requirements concurrently with another general education requirement (typically, GE-C, H, or S).

MAC 2312, MAC 2313, MAS 4105, and the math elective count towards 3000 level or above electives outside of the major.

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply.

Course	Title	Credits
Semester One		
MAC 2311	Analytic Geometry and Calculus 1 (Critical Tracking ; State Core Gen Ed Mathematics)	4
State Core Gen Ed Biological or Physical Sciences (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)		3
State Core Gen Ed Composition (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext); Writing Requirement		3
Gen Ed Social and Behavioral Sciences		3
Science laboratory (Gen Ed Biological or Physical Sciences)		1
Credits		14
Semester Two		
Quest 1 (Gen Ed Humanities)		3
MAC 2312	Analytic Geometry and Calculus 2 (Critical Tracking ; Gen Ed Mathematics)	4
STA 2023 or STA 3032	Introduction to Statistics 1 (Critical Tracking ; Gen Ed Mathematics) or Engineering Statistics	3
State Core Gen Ed Humanities (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)		3
State Core Gen Ed Social and Behavioral Sciences (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)		3
Credits		16
Semester Three		
Quest 2 (Gen Ed Biological or Physical Sciences-area not taken in semester one)		3
MAC 2313	Analytic Geometry and Calculus 3 (Critical Tracking ; Gen Ed Mathematics)	4
MHF 3202	Sets and Logic (Critical Tracking)	3
STA 3100	Programming With Data in R (Critical Tracking)	3
Foreign Language		3-5
Credits		16-18
Semester Four		
MAS 4105	Linear Algebra 1 (Critical Tracking)	4
Elective (needed if placed out of language with SAT II)		3
Foreign language		3-5
Gen Ed Humanities		3
Credits		13-15
Semester Five		
STA 4210	Regression Analysis (Critical Tracking ; Gen Ed Mathematics)	3
STA 4321	Introduction to Probability (Critical Tracking ; Gen Ed Mathematics)	3

Foreign language if 4-3-3 option		3
Gen Ed Physical Sciences		3
Gen Ed Social and Behavioral Sciences		3
	Credits	15
Semester Six		
STA 4211	Design of Experiments (Critical Tracking)	3
STA 4322	Introduction to Statistics Theory (Critical Tracking ; Gen Ed Mathematics)	3
Gen Ed Biological Sciences		3
Gen Ed Composition; Writing Requirement		3
Elective		3
	Credits	15
Semester Seven		
STA 4504	Categorical Data Analysis (Critical Tracking)	3
STA elective (Critical Tracking)		3
Elective (3000 level or above, not in major)		3
Electives		7
	Credits	16
Semester Eight		
Math science electives (Critical Tracking)		6
STA elective (Critical Tracking)		3
Electives		6
	Credits	15
	Total Credits	120

Academic Learning Compact

The statistics major enables students to achieve proficiency in the fundamentals of statistical reasoning. Through study of both theoretical and applied statistics and through data analysis projects, students will gain knowledge in problem solving, statistical applications and data-based inferences. Emphasis is on developing the ability to approach real world problems and through the use of statistical methods to be able to analyze and to draw valid scientific inferences.

Before Graduating Students Must

- Complete an exam on the fundamentals of statistics, which will be 5% of your grade in STA 4211.
- Complete a data analysis project, which will be 10% of your grade in STA 4211.
- Complete requirements for the baccalaureate degree, as determined by faculty.

Students in the Major Will Learn to

Student Learning Outcomes (SLOs)

Content

1. Identify, define and describe concepts and issues in statistics, including those involved in designing a statistical study, in statistical estimation and in tests of hypotheses.

Critical Thinking

2. Identify sources of variability in a given problem setting and formulate an appropriate statistical analysis.

Communication

3. Clearly and effectively present ideas in speech and in writing concerning statistical issues and analyses of data.

Curriculum Map

I = Introduced; R = Reinforced; A = Assessed

Courses	SLO 1	SLO 2	SLO 3
STA 4210	I	I	I
STA 4211	A	A	A
STA 4222	R	R	R
STA 4321	I		
STA 4322	I		
STA 4502	R	R	R

STA 4504	R	R	R
STA 4702	R	R	R
STA 4712	R	R	R
STA 4853	R	R	R

Assessment Types

- Exams
 - Projects
 - Written and oral presentations
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