MAJOR IN STATISTICS

Statistics is the science of modeling, summarizing, and analyzing data. Statisticians help people produce trustworthy data, analyze the data, and present the results in a useful manner. Statisticians work with people from other professional backgrounds to solve practical problems. They provide crucial guidance in determining what information is reliable and which predictions can be trusted. An exciting aspect of the field is the diversity of areas where statistical methods are used; this is one reason for continuing strong demand for well-trained statisticians. With the popularity of big data and the focus on quantitative analysis in many fields, there will continue to be a high demand for graduates with a statistics major or minor. Students who succeed in the field of statistics typically have strong quantitative skills, analytical minds, and like to help other people solve problems.

Learning Outcomes

Students completing this program will be able to:

- Conceptualize analytical questions in terms of a model,
- Apply their knowledge of the core set of statistical methods,
- Perform data analysis using statistical software,
- Interpret and communicate statistical results,
- Either attend graduate school in statistics or find professional employment in a statistics field upon completion of a statistics major.

Potential Occupations

Statisticians find employment in a wide range of industries including medicine (evaluating new medicines and medical treatments), computing, business, market research, natural resources, government, industrial quality control, social science research, and more. Almost every industry has a statistician or a group of statisticians somewhere in the organization. Graduate school is also an option after graduation. Many of our undergraduate majors have continued on to graduate school in statistics, either at CSU or other universities. Almost all statistics majors are able to find work in this field and/or gain entrance to graduate school after successfully completing a statistics degree.

To learn more about a Major in Statistics please see our Advising page (https://statistics.colostate.edu/advising/), or contact us at stats@stat.colostate.edu.

Requirements Effective Fall 2022

A minimum grade of C (2.000) is required in each CS, DSCI, MATH, and STAT course required for the major.

		AUCC	Credits
Freshman			
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
STAT 158	Introduction to R Programming		1
STAT 192	First-Year Seminar in Statistics		1
STAT 315	Intro to Theory and Practice of Statistics		3
Select one course from the following:			2-4
CS 150A	Culture and Coding: Java (GT-AH3)	3B	
CS 150B	Culture and Coding: Python (GT-AH3)	3B	
CS 152	Python for STEM		
CS 163	CS1—-No Prior Programming Experience		
CS 164	CS1–Computational Thinking with Java		
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)		1C	3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
Electives			4-6
	Total Credits		**30**
Sophomore			
MATH 261	Calculus for Physical Scientists III		4
STAT 341	Statistical Data Analysis I		3
STAT 342	Statistical Data Analysis II		3
Select one course from the following:			2-4
CS 220	Discrete Structures and their Applications		
MATH 235	Introduction to Mathematical Reasoning		
Select one course from the following:			3-4
DSCI 369	Linear Algebra for Data Science		

MATH 369	Linear Algebra I		
Select one course from the following:			3
JTC 300	Strategic Writing and Communication (GT-CO3)	2	
CO 300	Writing Arguments (GT-CO3)	2	
Biological and Physical Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#biological-physical-sciences)		3A	7
Electives			2-5
	Total Credits		**30**
Junior			
STAT 420	Probability and Mathematical Statistics I		3
STAT 430	Probability and Mathematical Statistics II	4A	3
STAT 472	Statistical Research--Design, Data, Methods	4A,4B,4C	3
Upper-Division STAT/DSCI/MATH/CS Elective[1]			3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	6
Social and Behavioral Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		3C	3
Electives			9
	Total Credits		**30**
Senior			
Upper-Division STAT/DSCI/MATH/CS Elective[1]			6
400-Level STAT Electives[2]			6
Electives[3]			18
	Total Credits		**30**
	Program Total Credits:		**120**

[1] Select upper-division (300- to 400-level) statistics, data science, mathematics, or computer science (excluding courses ending in -82 to-99).

[2] Select 400-level Statistics courses (excluding courses ending in -82 to-99)

[3] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To Prepare for First Semester: The Curriculum for the Statistics Major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. A minimum grade of C (2.000) is required in all CS, DSCI, MATH, and STAT courses which are required by the major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
STAT 192	First-Year Seminar in Statistics	X			1
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)				1C	3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)				3D	3
	Total Credits				**14**
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
STAT 158	Introduction to R Programming	X			1
STAT 315	Intro to Theory and Practice of Statistics		X		3

Select one course from the following:					2-4
CS 150A	Culture and Coding: Java (GT-AH3)			3B	
CS 150B	Culture and Coding: Python (GT-AH3)			3B	
CS 152	Python for STEM		X		
CS 163	CS1---No Prior Programming Experience		X		
CS 164	CS1--Computational Thinking with Java		X		
Electives					4-6
	Total Credits				**16**
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 261	Calculus for Physical Scientists III		X		4
STAT 341	Statistical Data Analysis I		X		3
Select one course from the following:					3-4
DSCI 369	Linear Algebra for Data Science				
MATH 369	Linear Algebra I				
Biological and Physical Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#biological-physical-sciences)				3A	4
	Total Credits				**14-15**
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
STAT 342	Statistical Data Analysis II	X			3
Select one course from the following:					2-4
CS 220	Discrete Structures and their Applications				
MATH 235	Introduction to Mathematical Reasoning				
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
JTC 300	Strategic Writing and Communication (GT-CO3)			2	
Biological and Physical Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#biological-physical-sciences)				3A	3
Electives					2-5
STAT 341 and STAT 342 must be completed by the end of Semester 4.		X			
	Total Credits				**15-16**
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
STAT 420	Probability and Mathematical Statistics I				3
STAT 472	Statistical Research--Design, Data, Methods			4A,4B,4C	3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
Social and Behavioral Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)				3C	3
Electives					3
	Total Credits				**15**
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
STAT 430	Probability and Mathematical Statistics II			4A	3
Upper-Division STAT/DSCI/MATH/CS Elective					3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
Electives					6
STAT 420 and STAT 430 must be completed by the end of Semester 6.		X			
	Total Credits				**15**
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Upper-Division STAT/DSCI/MATH/CS Elective					3
400-Level STAT Elective					3

Electives				9
Total Credits				**15**
Semester 8	**Critical**	**Recommended**	**AUCC**	**Credits**
Upper-Division STAT/DSCI/MATH/CS Elective	X			3
400-Level STAT Elective	X			3
Electives	X			9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.	X			
Total Credits				**15**
Program Total Credits:				**120**