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, and more. Almost every industry has a statistician or a group of statisticians somewhere in the organization. Graduate school is another pathway 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.

Requirements

Effective Fall 2015

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

A minimum grade of C is required in each mathematics, statistics, and computer science course required for the major.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>1A</td>
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<tr>
<td>MATH 160</td>
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<td>MATH 161</td>
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<td>STAT 192</td>
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<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
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<tr>
<td>Historical Perspectives</td>
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Total Credits 28

Sophomore

Select one group from the following:

- Group A:
  - CS 160: Foundations in Programming

- Group B:
  - CS 155: Introduction to Unix
  - CS 156: Introduction to C Programming I

In addition, to complete Group B, select at least two of the following:

- CS 157: Introduction to C Programming II
- CS 158/ MATH 158: Mathematical Algorithms in C
- MATH 151: Mathematical Algorithms in Matlab I
- MATH 152: Mathematical Algorithms in Maple
- JTC 300: Professional and Technical Communication (GT-CO3)
- MATH 261: Calculus for Physical Scientists III
- MATH 369: Linear Algebra I

Select one course from the following:

- STAT 301: Introduction to Statistical Methods
- STAT 307: Introduction to Biostatistics
- STAT 315: Statistics for Engineers and Scientists

Biological and Physical Sciences 7

Electives 3

Total Credits 30

Junior

- MATH 317: Advanced Calculus of One Variable

Select one course from the following:

- STAT 305: Sampling Techniques
- STAT 321: Elementary Probabilistic-Stochastic Modeling
- STAT 460: Applied Multivariate Analysis
- STAT 340: Multiple Regression Analysis
- STAT 350: Design of Experiments

Arts and Humanities 6

Social and Behavioral Sciences 3

Upper-Division CS/MATH/STAT Electives 1

Electives 6

Total Credits 31

Senior

- STAT 372: Data Analysis Tools
- STAT 420: Probability and Mathematical Statistics I
## Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>STAT 430</td>
<td>Probability and Mathematical Statistics II</td>
<td>4A</td>
<td>3</td>
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<tr>
<td>STAT 472</td>
<td>Statistical Consulting</td>
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<td>Elective</td>
<td>Upper-Division CS/MATH/STAT Elective¹</td>
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<td>Electives</td>
<td>Electives²</td>
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</table>

### Total Credits: 31

### Program Total Credits: 120

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

² 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).