



# Statistics Major and Applied Statistics Minor

[www.Statistics.Pitt.edu/Undergraduate](http://www.Statistics.Pitt.edu/Undergraduate)

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The field of statistical science is concerned with ways to explain variability in measurements. It is the science and art of making informed decisions in the face of uncertainties. Statistical reasoning is fundamental to research in many scientific fields. For example, probabilistic models of learning are used in education and psychology, and time series and regression models guide research in engineering, chemistry, economics, biology, and medicine. Recent high-profile court cases have shown the importance of the use of probability and statistics in law, especially in the fields of forensic medicine and DNA fingerprinting. Statisticians have also been instrumental in developing methods by which observations are obtained in many disciplines, such as randomized clinical trials in medicine and complex sample surveys in social and political science. Probability and statistics are basic to the actuarial sciences. When lists are compiled of the most important scientific theories and discoveries of the last century, a substantial number of these developments are seen to be inherently statistical in nature.

The Department of Statistics offers coursework leading to a bachelor's degree in statistics. The department also offers a wide array of introductory service courses for general undergraduate audiences; these courses deal with statistical methods in applications that require only high school mathematics. Students considering majoring in statistics should consult with the departmental advisor early in their studies, preferably during their freshman year.

## Required courses for the Statistics major

The statistics major requires the completion of 50 credits in statistics and mathematics, distributed as follows.

### Required course

STAT 1000 Applied Statistical Methods

With the approval of the major advisor, students may make substitutions for STAT 1000 under the conditions outlined below.

- STAT 0200 with a grade of B- or better; or
- Advanced Placement credit for STAT 0200; or
- STAT 1100 if the student is a Statistics-Business dual major.

### Both of the following courses

STAT 1221 Applied Regression

STAT 1223 Applied Regression Writing Practicum

### Both of the following courses

STAT 1151 Introduction to Probability

STAT 1152 Introduction to Mathematical Statistics

### Introductory applied statistics courses; chose two courses

STAT 1201 Applied Nonparametric Statistics

STAT 1211 Applied Categorical Data Analysis

STAT 1231 Applied Experimental Design

STAT 1241 Applied Sampling

STAT 1251 Statistical Quality Control

STAT 1261 Principles of Data Science

## Intermediate applied statistics courses

### Choose one course

STAT 1301 Statistical Packages

STAT 1311 Applied Multivariate Analysis

STAT 1321 Applied Time Series

STAT 1361 Statistical Learning and Data Science

### Both of the following courses

STAT 1631 Intermediate Probability

STAT 1632 Intermediate Mathematical Statistics

### One of the following courses

STAT 1731 Stochastic Processes

STAT 1741 Applied Probability Theory

### One elective course from the lists of introductory or intermediate applied statistics courses, or from the following list

STAT 1731 Stochastic Processes

STAT 1741 Applied Probability Theory

### Mathematics courses; choose one of the following groups

MATH 0220 Analytic Geometry and Calculus 1

MATH 0230 Analytic Geometry and Calculus 2

MATH 0240 Analytic Geometry and Calculus 3

MATH 0220 Analytic Geometry and Calculus 1

MATH 0235 Honors 1 Variable Calculus

MATH 0240 Analytic Geometry and Calculus 3

### One of the following courses

MATH 0280 Introduction to Matrices and Linear Algebra

MATH 1180 Linear Algebra 1

MATH 1185 Honors Linear Algebra

### Recommended courses

Because professional statisticians collaborate with other scientists, students are encouraged to take elective courses from the behavioral, natural, physical, and social sciences. Students who plan to study statistics at the graduate level are strongly advised to take MATH 0413 and MATH 0420, or MATH 0450 (in lieu of both MATH 0413 and MATH 0420), MATH 1180, and as many additional mathematics courses in advanced calculus (MATH 1530, 1540), numerical analysis (MATH 1070, 1110), and computer science courses (CS 0007, 0132, 0401, 0445, 0447) as possible.

### Grade requirements

A grade of C or better is required in each course that is to count toward the major.

### Satisfactory/No Credit option

No course that counts toward the major can be taken on an S/NC basis.

### Writing (W) requirement

Students must complete at least one W-course in the major.

### Honors major requirement

Honors in statistics is granted if in addition to fulfilling all requirements for the major, the student:

- has a minimum GPA of 3.5 in all mathematics and statistics courses taken; and
- has a minimum GPA of 3.7 in all 1000-level courses taken within the department.

### Advising

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### Checklist for the Statistics major

#### Required courses

\_\_\_\_\_ STAT 1000  
\_\_\_\_\_ STAT 1221  
\_\_\_\_\_ STAT 1223  
\_\_\_\_\_ STAT 1151  
\_\_\_\_\_ STAT 1152

### Two of the following introductory applied statistics courses

\_\_\_\_\_ STAT 1201  
\_\_\_\_\_ STAT 1211  
\_\_\_\_\_ STAT 1231  
\_\_\_\_\_ STAT 1241  
\_\_\_\_\_ STAT 1251  
\_\_\_\_\_ STAT 1261  
\_\_\_\_\_ STAT 1291  
\_\_\_\_\_ STAT 1292  
\_\_\_\_\_ STAT 1293  
\_\_\_\_\_ STAT 1294

### Intermediate applied statistics courses; choose one course

\_\_\_\_\_ STAT 1301  
\_\_\_\_\_ STAT 1311  
\_\_\_\_\_ STAT 1321  
\_\_\_\_\_ STAT 1361

### Both of the following courses

\_\_\_\_\_ STAT 1631 \_\_\_\_\_ STAT 1632

### One of the following courses

\_\_\_\_\_ STAT 1731 \_\_\_\_\_ STAT 1741

### One elective course from the lists of introductory or intermediate applied statistics courses, or from the following list

\_\_\_\_\_ STAT 12 \_\_\_\_\_ STAT 1731  
\_\_\_\_\_ STAT 13 \_\_\_\_\_ STAT 1741

### Four mathematics courses; choose one of the following groups

\_\_\_\_\_ MATH 0220 \_\_\_\_\_ MATH 0220  
\_\_\_\_\_ MATH 0230 \_\_\_\_\_ MATH 0235  
\_\_\_\_\_ MATH 0240 \_\_\_\_\_ MATH 0240

### One of the following courses

\_\_\_\_\_ MATH 0280  
\_\_\_\_\_ MATH 1180  
\_\_\_\_\_ MATH 1185

### Checklist for the Applied Statistics minor

\_\_\_\_\_ STAT 1000 <sup>1</sup>  
\_\_\_\_\_ STAT 1221  
\_\_\_\_\_ STAT 1 \_\_\_\_\_ (1200-level or above) <sup>2</sup>  
\_\_\_\_\_ STAT 1 \_\_\_\_\_ (1200-level or above)  
\_\_\_\_\_ STAT 1 \_\_\_\_\_ (1200-level or above)

1. Acceptable substitutes include ENGR 0020, STAT 0200, or STAT 1100.
2. STAT 1223 does not count toward the minor.

**Note:** Students must apply for any official minor they will complete or have completed at the time they apply for graduation.