

# BA in Statistics

## Degree Program Description

Statistics is a modern science concerned with making decisions and inferences from empirical data subject to random variability and error. It deals with designing experiments, sample surveys, summarizing numerical information, building and analyzing statistical models, prediction and choosing between alternate actions. Statistics can tell us how much safer it is to fly than drive, the odds of winning the lottery, our life expectancy and who is likely to win the next election. The BA in Statistics allows students to pursue either a traditional track or an applied track. Students who are interested in graduate study are strongly encouraged to follow the traditional track. All students are encouraged to supplement their work in statistics with courses from areas such as economics, biology, accounting, finance, marketing, management, psychology, sociology, engineering, agriculture and atmospheric science. Because of its importance as a scientific method, the demand for trained statisticians has grown in education, medicine, government, business and industry as well as in the biological, social and physical sciences. Students are trained to meet this demand and develop careers in teaching and research.

## Major Program Requirements

In addition to Department Degree Requirements (<http://catalog.missouri.edu/collegeofartsandscience/statistics/#undergraduatetext>), University (<http://catalog.missouri.edu/academicdegreerequirements/universityrequirements/>), general education (<http://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements/>), and College of Arts and Science (<http://catalog.missouri.edu/collegeofartsandscience/#undergraduatetext>) requirements, students must also meet the following major program requirements. All major requirements in the College of Arts and Science must be completed with grades of C- or higher unless otherwise indicated.

### Mathematics courses

#### Traditional track

|           |                                  |   |
|-----------|----------------------------------|---|
| MATH 1500 | Analytic Geometry and Calculus I | 5 |
| MATH 1700 | Calculus II                      | 5 |
| MATH 2300 | Calculus III                     | 3 |
| MATH 4140 | Matrix Theory                    | 3 |

#### Applied track

|              |                                             |     |
|--------------|---------------------------------------------|-----|
| MATH 1500    | Analytic Geometry and Calculus I            | 5-6 |
| or MATH 1300 | Finite Mathematics                          |     |
| & MATH 1400  | and Calculus for Social and Life Sciences I |     |

6 additional credits in statistics (beyond those used to fulfill the statistics requirements of the degree) or approved statistically-oriented courses; must be numbered 4000 or above and may not include STAT 4050 Connecting Statistics to Middle and Secondary Schools

### Statistics Courses

#### Traditional Track

|              |                                           |   |
|--------------|-------------------------------------------|---|
| STAT 4970W   | Junior/Senior Seminar - Writing Intensive | 3 |
| STAT 4710    | Introduction to Mathematical Statistics   | 3 |
| or STAT 4750 | Introduction to Probability Theory        |   |

15 additional credits offered by the department, at least 12 of which must be numbered 3000 or above and may not include STAT 4050: Connecting Statistics to Middle and Secondary Schools or more than 3 credits of STAT 4999: Departmental Honors in Statistics

#### Applied Track

|              |                                               |   |
|--------------|-----------------------------------------------|---|
| STAT 4970    | Junior/Senior Seminar                         | 3 |
| STAT 4710    | Introduction to Mathematical Statistics       | 3 |
| or STAT 4760 | Statistical Inference                         |   |
| or STAT 3500 | Introduction to Probability and Statistics II |   |

21 additional credits offered by the department, at least 18 of which must be numbered 3000 or above and may not include STAT 4050: Connecting Statistics to Middle and Secondary Schools or more than 3 credits of STAT 4999: Departmental Honors in Statistics

### Computing Courses

#### Both tracks: Select one course

|                |                                                 |   |
|----------------|-------------------------------------------------|---|
| CMP_SC 1300    | Computing with Data in Python                   | 3 |
| or INFOTC 1040 | Introduction to Problem Solving and Programming |   |
| or CMP_SC 1050 | Algorithm Design and Programming I              |   |

## Semester Plan

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

| First Year                          |    |                                               |           |
|-------------------------------------|----|-----------------------------------------------|-----------|
| Fall                                | CR | Spring                                        | CR        |
| MATH 1160 <sup>+</sup>              |    | 5 MATH 1500                                   | 5         |
| ENGLSH 1000 <sup>+</sup>            |    | 3 INFOTC 1040                                 | 3         |
| Elective                            |    | 3 Second Language II <sup>+</sup>             | 4         |
| Second Language I <sup>+</sup>      |    | 4 American History or Government <sup>+</sup> | 3         |
|                                     |    |                                               | <b>15</b> |
| Second Year                         |    |                                               |           |
| Fall                                | CR | Spring                                        | CR        |
| MATH 1700                           |    | 5 MATH 2300                                   | 3         |
| STAT 2500                           |    | 3 STAT 3500                                   | 3         |
| Second Language III <sup>+</sup>    |    | 4 Behav Science Elective <sup>+</sup>         | 3         |
| WI Elective                         |    | 3 Hum/Fine Arts Elective <sup>+</sup>         | 3         |
|                                     |    | Soc Science Elective <sup>+</sup>             | 3         |
|                                     |    |                                               | <b>15</b> |
| Third Year                          |    |                                               |           |
| Fall                                | CR | Spring                                        | CR        |
| MATH 4140                           |    | 3 STAT 4510                                   | 3         |
| STAT 4110                           |    | 3 STAT 4710                                   | 3         |
| Hum/Fine Arts Elective <sup>+</sup> |    | 3 Behav Sci Elective <sup>+</sup>             | 3         |
| Soc Science Elective <sup>+</sup>   |    | 3 Hum/Fine Arts Elective <sup>+</sup>         | 3         |
| Elective                            |    | 3 Elective                                    | 3         |
|                                     |    |                                               | <b>15</b> |
| Fourth Year                         |    |                                               |           |
| Fall                                | CR | Spring                                        | CR        |
| STAT 4520                           |    | 3 STAT 4760                                   | 3         |
| STAT 4750                           |    | 3 STAT 4970W <sup>+</sup>                     | 3         |
| Hum/Fine Arts elective              |    | 3 Electives                                   | 9         |
| Electives                           |    | 6                                             |           |
|                                     |    |                                               | <b>15</b> |

**Total Credits: 120**

+ Course meets University General Education and/or campus requirements