Department of Statistics

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Uncertainty is inescapable: randomness, measurement error, deception, and incomplete or missing information complicate all our lives. Statistics is the science and art of making predictions and decisions in the face of uncertainty. Statistical issues are central to big questions in public policy, law, medicine, industry, computing, technology, finance, and science. Indeed, the tools of Statistics apply to problems in almost every area of human activity where data are collected.

Statisticians must master diverse skills in computing, mathematics, decision making, forecasting, interpretation of complicated data, and design of meaningful comparisons. Moreover, statisticians must learn to collaborate effectively with people in other fields and, in the process, to understand the substance of these other fields. For all these reasons, Statistics students are highly sought-after in the marketplace.

Recent Statistics majors at Carnegie Mellon have taken jobs at leading companies in many fields, including the National Economic Research Association, Boeing, Morgan Stanley, Deloitte, Rosetta Marketing Group, Nielsen, Proctor and Gamble, Accenture, and Goldman Sachs. Other students have taken research positions at the National Security Agency, the U.S. Census Bureau, and the Science and Technology Policy Institute or worked for Teach for America. Many of our students have chosen to graduate study at some of the top programs in the country including Carnegie Mellon, the Wharton School at the University of Pennsylvania, Johns Hopkins, University of Michigan, Stanford University, Emory University, Yale University, Columbia University, and Georgia Tech.

The Department and Faculty

The Department of Statistics at Carnegie Mellon University is world-renowned for its contributions to statistical theory and practice. Research in the department runs the gamut from pure mathematics to the hottest frontiers of science. Current research projects are helping make fundamental advances in neuroscience, cosmology, seismology, finance, and genetics.

The faculty members are recognized around the world for their expertise and have garnered many prestigious awards and honors. For example, three members of the faculty have been awarded the COPSS medal, the highest honor given by professional statistical societies.) At the same time, the faculty is firmly dedicated to undergraduate education. The entire faculty, junior and senior, teach courses at all levels. The faculty are accessible and are committed to involving undergraduates in research.

The Department augments all these strengths with a friendly, energetic working environment and exceptional computing resources. Talented graduate students join the department from around the world, and add a unique dimension to the department’s intellectual life. Faculty, graduate students, and undergraduates interact regularly.

How to Take Part

There are many ways to get involved in Statistics at Carnegie Mellon:

- The Bachelor of Science in Statistics in the College of Humanities and Social Sciences (H&SS) is a broad-based, flexible program that helps you master both the theory and practice of Statistics. The program can be tailored to prepare you for further graduate study in Statistics or to complement your interests in almost any field, including Psychology, Physics, Biology, History, Business, Information Systems, and Computer Science.
- The Minor (or Additional Major) in Statistics is a useful complement to a (primary) major in another Department or College. Almost every field of inquiry must grapple with statistical problems, and the tools of statistical theory and data analysis you will develop in the Statistics minor will give you a critical edge.
- The Bachelor of Science in Economics and Statistics provides an interdisciplinary course of study aimed at students with a strong interest in the empirical analysis of economic data. Jointly administered by the Department of Statistics and the Undergraduate Economics Program, the major’s curriculum provides students with a solid foundation in the theories and methods of both fields. (See Dietrich College Interdepartmental Majors as well as in this section)
- The Statistical and Mathematical Sciences Program (within the Science and Humanities Scholars Program) is an alternative path for the study of Statistics that is jointly administered by the Department of Mathematical Sciences and the Department of Statistics.

- The Statistics Concentration and the OR and Statistics Concentration in the Mathematical Sciences Major (see Department of Mathematical Sciences) are jointly administered by the Department of Mathematical Sciences and the Department of Statistics.
- There are several ongoing exciting research projects in the Department of Statistics, and the department enthusiastically seeks to involve undergraduates in this work. Both majors and non-majors are welcome.
- Non-majors are eligible to take most of our courses, and indeed, they are required to do so by many programs on campus. Such courses offer one way to learn more about the Department of Statistics and the field in general.

Curriculum

Statistics consists of two intertwined threads of inquiry: Statistical Theory and Data Analysis. The former uses probability theory to build and analyze mathematical models of data in order to devise methods for making effective predictions and decisions in the face of uncertainty. The latter involves techniques for extracting insights from complicated data, designs for accurate measurement and comparison, and methods for checking the validity of the empirical assumptions. Statistical Theory informs Data Analysis and vice versa. The Statistics Department curriculum follows both of these threads and helps the student develop the complementary skills required.

Below, we describe the requirements for the Major in Statistics and the different categories within our basic curriculum, followed by the requirements for the Minor in Statistics and the requirements for the Major in Economics and Statistics.

Note: We recommend that you use the information provided below as a general guideline, and then schedule a meeting with a Statistics Undergraduate Advisor (email: acadcoord@stat.cmu.edu) to discuss the requirements in more detail, and build a program that is tailored to your strengths and interests.

B.S. in Statistics

Academic Advisor: Howard Seltman
Office: Baker Hall 132A
Email: acadcoord@stat.cmu.edu

Students in the Bachelor of Science program develop and master a wide array of skills in computing, mathematics, statistical theory, and the interpretation and display of complex data. In addition, Statistics majors gain experience in applying statistical tools to real problems in other fields and learn the nuances of interdisciplinary collaboration. The requirements for the Major in Statistics are detailed below and are organized by categories #1–#7.

28-38 units.1. Mathematical Foundations (Prerequisites)

Mathematics is the language in which statistical models are described and analyzed, so some experience with basic calculus and linear algebra is an important component for anyone pursuing a program of study in Statistics.

Calculus*: Complete one of the following three sequences of mathematics courses at Carnegie Mellon, each of which provides sufficient preparation in calculus:

**Sequence 1**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>21-111</td>
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<tr>
<td>21-112</td>
<td>10</td>
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</tbody>
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and one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>21-256</td>
<td>9</td>
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<tr>
<td>21-259</td>
<td>9</td>
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</table>

**Sequence 2**

<table>
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<th>Course</th>
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<tr>
<td>21-120</td>
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and one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tr>
<td>21-256</td>
<td>9</td>
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<tr>
<td>21-259</td>
<td>9</td>
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</tbody>
</table>
Note: Other sequences are possible, and require approval from the undergraduate advisor.

Note: Passing the MSC 21-120 assessment test is an acceptable alternative to completing 21-120.

**Linear Algebra****: Complete one of the following three courses:

- 21-240 Matrix Algebra with Applications
- 21-241 Matrices and Linear Transformations
- 21-242 Matrix Theory

* It is recommended that students complete the calculus requirement during their freshman year.

**The linear algebra requirement needs to be completed before taking 36-401 Modern Regression.

21-241 and 21-242 are intended only for students with a very strong mathematical background.

45 units2. **Data Analysis:**

Data analysis is the art and science of extracting insight from data. The art lies in knowing which displays or techniques will reveal the most interesting features of a complicated data set. The science lies in understanding the various techniques and the assumptions on which they rely. Both aspects require practice to master.

The Beginning Data Analysis courses give a hands-on introduction to the art and science of data analysis. The courses cover similar topics but differ slightly in the examples they emphasize. 36-201 draws examples from many fields and satisfies the IL&GS College Core Requirement in Statistical Reasoning. It is therefore the recommended course for students in the College. (Note: A score of 5 on the Advanced Placement (AP) Exam in Statistics may be used to waive this requirement). Other courses emphasize examples in business (36-207), engineering and architecture (36-220), and the laboratory sciences (36-247).

The Intermediate Data Analysis courses build on the principles and methods covered in the introductory course, and more fully explore specific types of data analysis methods in more depth.

The Advanced Data Analysis courses draw on students' previous experience with data analysis and understanding of statistical theory to develop advanced, more sophisticated methods. These core courses involve extensive analysis of real data with emphasis on developing the oral and writing skills needed for communicating results.

**Beginning**

Choose one of the following courses:

- 36-201 Statistical Reasoning and Practice 9
- 36/70-207 Probability and Statistics for Business Applications 9
- 36-220 Engineering Statistics and Quality Control 9
- 36-247 Statistics for Lab Sciences 9

* Or extra statistical elective

Note: Students who enter the program with 36-225 or 36-226 should discuss options with an advisor. Any 36-300 or 36-400 level course that does not satisfy any other requirement for a Statistics Major or Minor may be used as a substitute.

**Intermediate**

Choose one of the following courses:

- 36-202 Statistical Methods 9
- 36/70-208 Regression Analysis 9
- 36-309 Experimental Design for Behavioral and Social Sciences 9

* Or extra statistical elective

**Advanced**

Choose one of the following courses:

- 36-303 Sampling, Survey and Society 9
- 36-315 Statistical Graphics and Visualization 9

Students can also take a second 35-46x (see section #5), and take the following two courses:

36-401 Modern Regression 9
36-402 Advanced Methods for Data Analysis 9

18 units. **Probability Theory and Statistical Theory:**

The theory of probability gives a mathematical description of the randomness inherent in our observations. It is the language in which statistical models are stated, so an understanding of probability is essential for the study of statistical theory. Statistical theory provides a mathematical framework for making inferences about unknown quantities from data. The theory reduces statistical problems to their essential ingredients to help devise and evaluate inferential procedures. It provides a powerful and wide-ranging set of tools for dealing with uncertainty.

To satisfy the theory requirement take the following two courses:

- 36-225 Introduction to Probability Theory ** 9
- 36-226 Introduction to Statistical Inference 9
- 36-326 Mathematical Statistics (Honors) 9

**It is possible to substitute 36-217 or 21-325 for 36-225. (36-225 is the standard introduction to probability, 36-217 is tailored for engineers and computer scientists, and 21-325 is a rigorous Probability Theory course offered by the Department of Mathematics.)

Comments:

(i) In order to be a Major or a Minor in good standing, a grade of at least a C is required in 36-225, 36-226 and 36-401. In particular, a grade of C or higher is required in order to be able to continue in the major.

(ii) In special cases, and in consultation with the Statistics Advisor, the theory requirement can be satisfied by taking the graduate level class 36-625 Probability and Mathematical Statistics I, which is much more mathematically rigorous. This option should be considered by strong Statistics Majors who are also majoring in Computer Science, Operations Research, or Mathematics and/or who are considering graduate study in Statistics. This option is not open to student who have taken 36-326 and does requires special permission from the advisor. Students who end up satisfying the theory requirement by taking the (single) course 36-625 are required take an additional statistics elective (see category #6, Statistical Electives, below).

4. **Statistical Computing:**

- 36-350 Statistical Computing * 9

*A higher level Computer Science course approved by your Statistics advisor may be used as a substitute.

9 units. **Special Topics:**

The Statistics Department offers advanced courses that focus on specific statistical applications or advanced statistical methods. These courses are numbered 36-46x (36-461, 36-462, etc.). Two of these courses will be offered every year, one per semester. Past topics included Statistical Learning, Data Mining, Statistics and the Law, Bayesian Statistics, Nonparametric Statistics, Statistical Genetics, Multilevel and Hierarchical Models, and Statistical Methods in Epidemiology. The objective of the course is to expose students to important topics in statistics and/or interesting applications which are not part of the standard undergraduate curriculum.

To satisfy the Special Topics requirement choose one of the 36-46x courses (which are 9 units).

Note: All 36-46x courses require 36-401 as a prerequisite or instructor permission.

9 units. **Statistical Elective:**

Students are required to take one* elective which can be within or outside the Statistics Department. **Courses within statistics** can be any 300 or 400 level course (that is not used to satisfy any other requirement for the statistics major).

The following is a partial list of **courses outside statistics** that qualify as electives as they provide intellectual infrastructure that will advance the student's understanding of statistics and its applications. Other courses may qualify as well; consult with the Statistics Undergraduate Advisor.

- 15-110 Principles of Computing 10
- 15-121 Introduction to Data Structures 10
- 15-122 Principles of Imperative Computation 10
- 21-127 Concepts of Mathematics 10
Mathematical Statistics (Honors) as an alternative to 36-226. Although with Mathematical Sciences as the Concentration Area. They should see Students interested in pursuing a PhD in Statistics or Biostatistics (or Recommendations for Prospective PhD Students

Students interested in pursuing a PhD in Statistics or Biostatistics (or related programs) after completing their undergraduate degree are strongly recommended to take additional Mathematics courses, perhaps with Mathematical Sciences as the Concentration Area. They should see a faculty advisor as soon as possible. Students should consider 36-326 Mathematical Statistics (Honors) as an alternative to 36-226. Although

21-240 Matrix Algebra with Applications is recommended for Statistics majors, students considering PhD programs may wish to take 21-241 Matrices and Linear Transformations or 21-242 Matrix Theory instead. Additional courses should include both 21-127 Concepts of Mathematics and 21-355 Principles of Real Analysis I.

Prospective PhD students should also consider additional courses among 21-228 Discrete Mathematics, 21-260 Differential Equations, 21-341 Linear Algebra, and 21-356 Principles of Real Analysis II.

Additional Major in Statistics

Students who elect Statistics as a second or third major must fulfill all Statistics degree requirements except for the Concentration Area requirement. Majors in many other programs would naturally complement a Statistics Major, including Transparency Upgrade business program, Social and Decision Sciences, Policy and Management, and Psychology.

With respect to double-counting courses, it is departmental policy that students must have at least five statistics courses that do not count for their primary major. If students do not have at least five, they typically take additional advanced electives.

Students are advised to begin planning their curriculum (with appropriate advisors) as soon as possible. This is particularly true if the other major has a complex set of requirements and prerequisites or when many of the other major’s requirements overlap with the requirements for a Major in Statistics.

Research

One goal of the Statistics program is to give students experience with statistical research. There is a wide variety of ongoing research projects in the department, and students have several opportunities to get involved in a project that interests them.

Before graduation, students are encouraged to participate in a research project under faculty supervision. Students can do this through projects in specific courses (such as 36-303), through an independent study, or through a summer research position.

Qualified students are also encouraged to participate in an advanced research project through 36-490 Undergraduate Research or independent study under the supervision of a Statistics faculty advisor. Students who maintain a quality point average of 3.25 overall may also apply to participate in the H&SS Senior Honors Program (http://coursecatalog.web.cmu.edu/dietrichcollegeofhumanitiesandsocialsciences/#collegeservicesandprograms).

Sample Programs

The following sample programs illustrate two (of many) ways to satisfy the requirements of the Statistics Major. However, keep in mind that the program is flexible enough to support many other possible schedules and to emphasize a wide variety of interests.

The first schedule uses calculus sequence 1, and 21-127 Concepts of Mathematics as a Statistical Elective outside of Statistics.

The second schedule is an example of the case when a student enters the program through 36-225 and 36-226 (and therefore skips the beginning data analysis course). The schedule uses calculus sequence 2, and includes two electives (36-315 and 36-410), both within the Statistics Department. This schedule has more emphasis on statistical theory and probability.

In both schedules, C.A. refers to Concentration Area courses.

Schedule 1

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
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<tbody>
<tr>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
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<tr>
<td>36-201 Statistical Reasoning and Practice</td>
<td>36-202 Statistical Methods</td>
</tr>
<tr>
<td>21-111 Calculus I</td>
<td>21-127 Concepts of Mathematics</td>
</tr>
<tr>
<td>21-112 Calculus II</td>
<td>36-315 Statistical Graphics and Visualization</td>
</tr>
<tr>
<td>36-225 Introduction to Probability Theory</td>
<td>36-226 Introduction to Statistical Inference</td>
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<tr>
<td>36-350 Statistical Computing</td>
<td>36-401 Multivariate Analysis</td>
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<td>C.A.</td>
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<tr>
<td><strong>Senior</strong></td>
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<tr>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
</tr>
<tr>
<td>36-225 Introduction to Probability Theory</td>
<td>36-226 Introduction to Statistical Inference</td>
</tr>
<tr>
<td>36-401 Modern Regression</td>
<td>36-403 Advanced Methods for Data Analysis</td>
</tr>
<tr>
<td>21-240 Matrix Algebra with Applications</td>
<td>C.A.</td>
</tr>
<tr>
<td>C.A.</td>
<td>C.A.</td>
</tr>
<tr>
<td>36-350 Statistical Computing</td>
<td>36-46x Special Topics</td>
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<tr>
<td>C.A.</td>
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</tbody>
</table>
The requirements for the B.S. in Economics and Statistics are the following:

I. PREREQUISITES 38-39 UNITS

1. Mathematical Foundations 38-39 units

Calculus

- 21-120 Differential and Integral Calculus 10
- and one of the following three:
  - 21-122 Integration and Approximation 10
  - 21-127 Concepts of Mathematics 10
  - 21-257 Models and Methods for Optimization 10
- 21-256 Multivariate Analysis 9
- 21-259 Calculus in Three Dimensions 9

Note: The Mathematical Foundations total is then 48-49 units. The Economics and Statistics major would then total 201-202 units.

Note: Taking both 21-111 and 21-112 is equivalent to 21-120.

Linear Algebra

- 21-240 Matrix Algebra with Applications 10
- 21-241 Matrices and Linear Transformations 10
- 21-242 Matrix Theory 10

Note: 21-241 and 21-242 are intended only for students with a very strong mathematical background.

2. Economics Foundations 9 units
- 73-100 Principles of Economics 9

3. Statistical Foundations 18 units
- 36-201 Statistical Reasoning and Practice 9
and one of the following:
- 36-202 Statistical Methods 9
- 36-208 Regression Analysis 9
- 36-309 Experimental Design for Behavioral and Social Sciences 9

Or extra statistical elective**

**Students who enter the program with 36-225/36-226 should discuss with their advisors.

II. DISCIPLINARY CORE 126 UNITS

1. Economics Core 36 units
- 73-230 Intermediate Microeconomics * 9
- 73-240 Intermediate Macroeconomics 9
- 73-270 Writing for Economists 9
- 73-363 Econometrics 9

*Starting Fall 2015 21-256 or 21-259 will be a prerequisite for 73-230.

2. Statistics Core 36 units
- 36-225 Introduction to Probability Theory ** 9
and one of the following two courses:
- 36-226 Introduction to Statistical Inference * 9
- 36-326 Mathematical Statistics (Honors) * 9

and both of the following two courses:
- 36-401 Modern Regression * 9
- 36-402 Advanced Methods for Data Analysis 9

*In order to be a major in good standing, a grade of C or better is required in 36-225 (or equivalents), 36-226 or 36-326 and 36-401.

#It is possible to substitute 36-217 or 21-325 for 36-225. (36-225 is the standard introduction to probability, 36-217 is tailored for engineers and computer scientists, and 21-325 is a rigorous Probability Theory course offered by the Department of Mathematics.)

3. Computing 9 units
- 36-350 Statistical Computing * 9

*A higher level Computer Science course approved by your Academic Advisor may be used as a substitute.

4. Advanced Electives 45 units

Students must take three advanced Economics elective courses (numbered 73-300 through 73-495, excluding 73-363, 73-407 and 73-450) and two
advanced Statistics elective courses (numbered 36-303, 36-315, 36-350 or 36-410 through 36-495).

Total number of units for the major 191-192 units
Total number of units for the degree 360 units

Recommendations for Prospective PhD Students

Students interested in pursuing a PhD in Statistics or Biostatistics (or related programs) after completing their undergraduate degree are strongly recommended to take additional Mathematics courses, perhaps with Mathematical Sciences as the Concentration Area. They should see a faculty advisor as soon as possible. Students should consider 36-326 (Mathematical Statistics) (Honors) as an alternative to 36-226. Although 21-240 Matrix Algebra with Applications is recommended for Statistics majors, students considering PhD programs may wish to take 21-241 Matrices and Linear Transformations or 21-242 Matrix Theory instead. Additional courses should include both 21-127 Concepts of Mathematics and 21-355 Principles of Real Analysis I.

Prospective PhD students should also consider additional courses among 21-228 Discrete Mathematics, 21-260 Differential Equations, 21-341 Linear Algebra, and 21-356 Principles of Real Analysis II.

Sample Program

The following sample program illustrates one way to satisfy the requirements of the Economics and Statistics Major. Keep in mind that the program is flexible and can support other possible schedules (see footnotes below the schedule).

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
</tr>
<tr>
<td>21-120 Differential and Integral Calculus</td>
<td>21-259 Calculus in Three Dimensions</td>
</tr>
<tr>
<td>36-201 Statistical Reasoning and Practice Methods</td>
<td>36-202 Statistical Methods</td>
</tr>
<tr>
<td>73-100 Principles of Economics</td>
<td>73-230 Intermediate Microeconomics</td>
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<tr>
<th>Junior</th>
<th>Senior</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
</tr>
<tr>
<td>36-350 Statistical Computing</td>
<td>36-402 Advanced Methods for Data Analysis</td>
</tr>
<tr>
<td>36-401 Modern Regression</td>
<td>73-270 Writing for Economists</td>
</tr>
<tr>
<td>73-363 Econometrics</td>
<td>Economics Elective</td>
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</tbody>
</table>

*In each semester, ----- represents other courses (not related to the major) which are needed in order to complete the 360 units that the degree requires.

Prospective PhD students might add 21-127 fall of sophomore year, replace 21-240 with 21-241, add 21-260 in spring of junior year and 21-355 in fall of senior year.

Students who elect Economics and Statistics as a second major must fulfill all Economics and Statistics degree requirements. Majors in many other programs would naturally complement a Statistics Major, including Business Administration, Social and Decision Sciences, Policy and Management, History and Policy, and Psychology.

With respect to double-counting courses, it is departmental policy that students must have at least three statistics courses that do not count for their primary major. If students do not have at least three, they typically take additional advanced electives.

Students are advised to begin planning their curriculum (with appropriate advisors) as soon as possible. This is particularly true if the other major has a complex set of requirements and prerequisites.

The Minor in Statistics

Faculty Advisor: Howard Seltman
Office: Baker Hall 132A
Email: acadcoord@stat.cmu.edu

The Minor in Statistics develops skills that complement major study in other disciplines. The program helps the student master the basics of statistical theory and advanced techniques in data analysis. This is a good choice for deepening understanding of statistical ideas and for strengthening research skills.

In order to get a minor in Statistics a student must satisfy all the requirements in categories 1, 2 and 3 of the major requirement (see above) with the exception that in the advanced data analysis part only 36-401 and 36-402 are required. In other words, the requirements for the minor are (read the section about the Major in Statistics for details):

- 28-38 units1. Mathematical Foundations (Prerequisites)
- 36 units2. Data Analysis:
  - Beginning Data Analysis: 9 units (one course) - see Major requirements above.
  - Intermediate Data Analysis: 9 units (one course) - see Major requirements above.
- 18 units3. Probability Theory and Statistical Theory:
- 82 Units Total number of units required for the minor

With respect to double-counting courses, it is departmental policy that students must have at least three statistics courses that do not count for their primary major. If students do not have at least three, they typically take additional advanced electives.

Sample Programs for the Minor

The following two sample programs illustrates two (of many) ways to satisfy the requirements of the Statistics Minor. Keep in mind that the program is flexible and can support many other possible schedules.

The first schedule uses calculus sequence 1, and 36-309 to satisfy the intermediate data analysis requirement. The second schedule is an example of the case when a student enters the Minor through 36-225 and 36-226 (and therefore skips the beginning data analysis course). The schedule uses calculus sequence 2, and 36-315 as an elective to replace the beginning data analysis course.

Schedule 1

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
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<tr>
<td>21-111 Calculus I</td>
<td>21-256 Multivariate Analysis</td>
</tr>
<tr>
<td>36-203 Statistical Reasoning and Practice</td>
<td>36-309 Experimental Design for Behavioral and Social Sciences</td>
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</tbody>
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Schedule 2

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
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<tbody>
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<td>21-120 Differential and Integral Calculus</td>
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<td>36-401 Modern Regression</td>
<td>36-309 Experimental Design for Behavioral and Social Sciences</td>
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</tbody>
</table>

Substitutions and Waivers

Many departments require Statistics courses as part of their Major or Minor programs. Students seeking transfer credit for those requirements from substitute courses (at Carnegie Mellon or elsewhere) should seek permission from their advisor in the department setting the requirement. The final authority in such decisions rests there. The Statistics Department does...
not provide approval or permission for substitution or waiver of another department’s requirements.

However, the Statistics Director of Undergraduate Studies will provide advice and information to the student's advisor about the viability of a proposed substitution. Students should make available as much information as possible concerning proposed substitutions. Students seeking waivers may be asked to demonstrate mastery of the material.

Statistics Majors and Minors seeking substitutions or waivers should speak to the Statistics Director of Undergraduate Studies.

Faculty
STEPHEN E. Fienberg, University Professor and Maurice Falk Professor of Statistics and Social Sciences – Ph.D., Harvard University; Carnegie Mellon, 1980–.
CHRISTOPHER GENOVESE, Professor of Statistics – Ph.D., University of California, Berkeley; Carnegie Mellon, 1994–.
JOEL B. GREENHOUSE, Professor of Statistics – Ph.D., University of Michigan; Carnegie Mellon, 1982–.
JIASHUN JIN, Professor of Statistics – Ph.D., Stanford University; Carnegie Mellon, 2007–.
BRIAN JUNKER, Professor of Statistics – Ph.D., University of Illinois; Carnegie Mellon, 1990–.
ROBERT E. KASS, Professor of Statistics – Ph.D., University of Chicago; Carnegie Mellon, 1981–.
ANN LEE, Associate Professor – Ph.D., Brown University; Carnegie Mellon, 2005–.
JOHN P. LEHOCZKY, Thomas Lord Professor of Statistics and Dean of the College of Humanities and Social Sciences – Ph.D., Stanford University; Carnegie Mellon, 1969–.
JING LEI, Assistant Professor – Ph.D., University of California, Berkeley; Carnegie Mellon, 2011–.
REBECCA NUGENT, Associate Teaching Professor – Ph.D., University of Washington; Carnegie Mellon, 2006–.
ALESSANDRO RINALDO, Associate Professor – Ph.D., Carnegie Mellon; Carnegie Mellon, 2005–.
KATHRYN ROEDER, Professor of Statistics – Ph.D., Pennsylvania State University; Carnegie Mellon, 1994–.
CHAD M. SCHAFER, Associate Professor – Ph.D., University of California, Berkeley; Carnegie Mellon, 2004–.
MARK J. SCHERVISH, Department Head and Professor of Statistics – Ph.D., University of Illinois; Carnegie Mellon, 1979–.
TEDDY SEIDENFELD, Herbert A. Simon Professor of Philosophy and Statistics – Ph.D., Columbia University; Carnegie Mellon, 1985–.
COSMA SHALIZI, Associate Professor – Ph.D., University of Wisconsin, Madison; Carnegie Mellon, 2005–.
RYAN TIBSHIRANI, Assistant Professor – Ph.D., Stanford University; Carnegie Mellon, 2011–.
VALERIE VENTURA, Associate Professor – Ph.D., University of Oxford; Carnegie Mellon, 1997–.
LARRY Wasserman, Professor of Statistics – Ph.D., University of Toronto; Carnegie Mellon, 1988–.

Emeriti Faculty
GEORGE T. DUNCAN, Professor of Statistics and Public Policy – Ph.D., University of Minnesota; Carnegie Mellon, 1974–.
WILLIAM F. EDDY, John C. Warner Professor of Statistics – Ph.D., Yale University; Carnegie Mellon, 1976–.
JOSEPH B. KADANE, Leonard J. Savage Professor of Statistics and Social Sciences – Ph.D., Stanford University; Carnegie Mellon, 1969–.

Adjunct Faculty
ANTHONY BROCKWELL, – Ph.D., Melbourne University; Carnegie Mellon, 1999–.

BERNIE DEVLIN, – Ph.D., Pennsylvania State University; Carnegie Mellon, 1994–.

Visiting Faculty
JESSI CISEWSKI, Visiting Assistant Professor – Ph.D., University of North Carolina; Carnegie Mellon, 2012–.
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