The Department of Statistics is a world leader in the field, and its faculty includes major figures in statistics and probability, and their application to such disciplines as genetics, finance, medicine, climatology, computer vision, linguistics, and chemical kinetics. Course offerings in statistics and probability range from the highly mathematical to those that focus on data analysis and statistical computation—and even a class on the history of statistics.

Statistics is an excellent field for students with strong mathematical skills and an interest in applying these skills to problems in the natural and social sciences.

Sample Courses

History of Statistics
This course covers the period from 1650 to 1950, with emphasis on developments in the theory of probability and how they came to be used in the sciences. Students use this analysis to develop a conceptual framework for scientific theories.

Design and Analysis of Experiments
This course introduces the application of linear models in experimental design, emphasizing such basic principles as blocking, randomization, and incomplete layouts. Students examine standard designs—fractional factorial, incomplete block, split unit designs—within this context.

Introduction to Probability Models
In this course, students study models for a variety of phenomena in the physical and biological sciences, with an emphasis on such stochastic processes as discrete time Markov chains, Poisson processes, continuous time Markov processes, and Brownian motion.

Applied Regression Analysis
This course introduces multiple regression models using real data from the natural and social sciences. Students focus on the method of least squares, including residuals, transformation of data, selection of regression equations, dummy variables, tests of fit, and nonlinear models.

Complex Statistical Problems
The topics studied in this course vary from year to year. Recently, students have investigated the impact of missing data on statistical analyses, algorithms for iterative maximum likelihood estimation, and Bayesian computation.

At the University of Chicago, the statistics major offers coverage of the principles and methods of statistics in combination with a solid training in mathematics and some exposure to computing.
In addition, there is considerable elective freedom, enabling interested students to examine those areas of knowledge in the biological, physical, and social sciences that are often subjected to detailed statistical analysis. This flexibility makes it feasible to complete the statistics major and an additional major simultaneously—many statistics majors also major in mathematics, economics, or other disciplines. An honors program in statistics is available, which includes writing an honors paper under the supervision of a faculty member, usually in some application of
statistics to a scientific problem. Moreover, every undergraduate student has the opportunity to take graduate level courses in the University; undergraduates majoring in statistics may be particularly interested in taking classes in our statistics PhD program, or may even choose to pursue such a degree upon graduation.

**Minor in Statistics**

The focus of the statistics minor is on statistical methodology, whereas the statistics major has a substantial theoretical component. The minor is quite popular, and students enrolled in it have come from a broad range of majors in the natural and social sciences and humanities. The minor is of particular value to students planning to collect or analyze data as part of their work in their field of study, particularly within biology, psychology, and economics.

**Joint BA/MS in Statistics**

For exceptionally qualified undergraduates, the department offers a joint BA/MS program that enables students to complete a master of science in statistics along with a bachelor’s degree during their four years at the College. Participants in the joint BA/MS program must meet the same requirements as students in the MS program in statistics. Of the nine courses that are required for the MS, up to three may also meet the requirements of an undergraduate program. Other requirements include a master’s paper and participation in the consulting program of the Department of Statistics.

**Offerings for Non-Majors**

A large percentage of undergraduates take at least one class in statistics. The department offers introductory classes at several levels for this purpose. However, many students who are not planning to pursue a major or minor in statistics will want to take more than one class in the department. For example, it is common for students to follow up their introductory class in statistics with one in regression analysis, the most commonly used statistical methodology. Other students take a two-quarter introduction to statistical theory and methodology. This sequence is a prerequisite for many advanced courses and is highly appropriate for students considering graduate study in such quantitative disciplines as economics, computer science, or electrical engineering.

**Career Preparation**

The statistics major prepares students for a multitude of fields in which analytic, quantitative, and technical skills are used. Several pre-professional programs through UChicago’s Career Advising and Planning Services (CAPS) help students augment their education with hands-on experience, guidance from expert advisors, and networking opportunities.

CAPS pre-professional “Chicago Careers in” programs:

- The Arts
- Business
- Health Professions
- Higher Education
- Journalism
- Law
- Public and Social Service
- Science and Technology

Through some of the programs, students can take courses in the University’s six professional schools:

- University of Chicago Booth School of Business
- Divinity School
- University of Chicago Harris School of Public Policy
- Law School
- Pritzker School of Medicine
- School of Social Service Administration

The Chicago Careers in Business (CCIB) program is especially popular among statistics majors. The CCIB program includes professional advising, courses at Chicago Booth, mentorship from fourth-year CCIB and Chicago Booth students, and weekly workshops led by industry professionals. Career and internship fairs and on-campus recruiting connect students to potential employers.