Department of Statistics

Chair

- Dan Liviu Nicolae, Statistics and Medicine

Professors

- Yali Amit
- Mihai Anitescu, Argonne National Laboratory
- Nicolas Brunel
- Jian Ding
- Lars Peter Hansen, Economics and Statistics
- John Lafferty
- Steven P. Lalley
- Gregory F. Lawler, Mathematics and Statistics
- Peter McCullagh
- Mary Sara McPeek
- Per Mykland
- Dan Liviu Nicolae, Statistics and Medicine
- John Reinitz
- Mary Silber
- Michael L. Stein, Master of the Physical Sciences Collegiate Division
- Matthew Stephens
- Stephen M. Stigler
- Ronald Thisted, Vice Provost for Academic Affairs, Public Health Sciences, Statistics
- Kirk M. Wolter
- Wei Biao Wu

Associate Professors

- Jian Ding

Assistant Professors

- Rina Foygel Barber
- Zheng (Tracy) Ke
- Imre Risi Kondor, Computer Science and Statistics
- Lek-Heng Lim
The Department of Statistics offers an exciting and revamped graduate program that prepares students for cutting-edge interdisciplinary research in a wide variety of fields. The field of statistics has become a core component of research in the biological, physical, and social sciences, as well as in traditional computer science domains such as artificial intelligence. In light of this, the Department of Statistics is currently undergoing a major expansion of approximately ten new faculty into fields of Computational and Applied Mathematics. The massive increase in the data acquired, through scientific measurement on one hand and through web-based collection on the other, makes the development of statistical analysis and prediction methodologies more relevant than ever. Our graduate program aims to prepare students to address these issues through rigorous training in theory, methodology, and applications of statistics; rigorous training in scientific computation; and research projects in core methodology of statistics and computation as well as in a wide variety of interdisciplinary fields.

The Department of Statistics offers two tracks of graduate study, one leading to the Master of Science (M.S.) degree, the other to the Doctorate of Philosophy (Ph.D.). The M.S. degree is a professional degree. Students who receive this degree are prepared for nonacademic
careers in which the use of advanced statistical and computational methods is of central importance. The program also prepares students for possible further graduate study.

During the first year of the Ph.D. program, students are given a thorough grounding in material that forms the foundations of modern statistics and scientific computation, including data analysis, mathematical statistics, probability theory, applied probability and modeling, and computational methods. Throughout the entire program, students attend a weekly consulting seminar where researchers from across the University come to get advice on modeling, statistical analysis, and computation. This seminar is often the source of interesting and ongoing research projects.

In the second year, students have a wide range of choices of topics they can pursue further, based on their interests, through advanced courses and reading courses with faculty. During the second year, students will typically identify their subfield of interest, take some advanced courses in the subject, and interact with the relevant faculty members. The Department maintains very strong connections to numerous other units on campus, either through joint appointments of the faculty or through ongoing collaborations. Students have easy access to faculty in other departments, which allows them to expand their interactions and develop new interdisciplinary research projects. Examples include joint projects with Human Genetics, Ecology and Evolution, Neurobiology, Chemistry, Economics, Health Studies, and Astronomy.

**Programs and Requirements for the Ph.D.**

All sufficiently well-prepared students take 3 of 4 sequences in their first year:

- Applied Statistics
- Theoretical Statistics
- Probability
- Computation and Machine Learning

All students pass prelim exams in 2 of the 4 subjects by the beginning of their second year. Well-prepared students may be allowed to pass one or both of their exams upon arrival. Students should take a distribution requirement of up to two courses in their second year and are otherwise encouraged to explore the great variety of graduate courses on offer, both inside the department and in other departments.

Starting in their second year, students should find a topic for a Ph.D. dissertation and establish a relationship with a Ph.D. adviser. Taking courses with potential advisers is part of this process. The detailed process is listed here (http://www.stat.uchicago.edu/students/phd_rules.shtml).

**The Ph.D.: Training in Teaching, Presentation, and Consulting**

Part of every statistician’s job is to evaluate the work of others and to communicate knowledge, experience, and insights. Every statistician is, to some extent, an educator, and the department provides graduate students with training for this aspect of their
professional lives. The department expects all doctoral students, regardless of their professional objectives and sources of financial support, to take part in a graduated program of participation in some or all phases of instruction, from grading, course assisting, and conducting discussion sections, to being a lecturer with responsibility for an entire course.

Students also receive training in how to present research in short seminars in the first and second years of study. Later, students present their own work in a dissertation proposal and, eventually, in a thesis defense. The student seminars are listed here (http://www.stat.uchicago.edu/seminars/index.shtml).

Ph.D. students should also participate in the department’s consulting program (http://galton.uchicago.edu/consulting/index.shtml), which is led by faculty members and exposes the students to empirical projects inside the university. Projects are carried out by groups of students under the guidance of a faculty member. The client is a researcher in an applied area, usually associated with the university. An informal seminar meets regularly over lunch to provide a forum for presenting and discussing problems, solutions, and topics in statistical consultation. Students present interesting or difficult consulting problems to the seminar as a way of stimulating wider consideration of the problem and as a means of developing familiarity with the kinds of problems and lines of attack involved. Often the client will participate in the presentation and discussion.

Programs and Requirements for the M.S. degree
The main requirements of the M.S. program are a sequence of at least nine approved courses plus a Master’s paper. Students may take up to two years of courses. A detailed set of regulations can be found here (http://galton.uchicago.edu/students/master.shtml). A substantial fraction of available courses are the same as for the Ph.D. degree.

Facilities
Almost all departmental activities—classes, seminars (http://galton.uchicago.edu/seminars/index.shtml), computation (http://galton.uchicago.edu/local/computing), and student and faculty offices (http://galton.uchicago.edu/people)—are located in Eckhart Hall or neighboring Ryerson Hall. Each student is assigned a desk in one of several offices. A small departmental library and conference room is a common meeting place for formal and informal gatherings of students and faculty. The major computing facilities of the department are based upon a network of PCs running mainly Linux. One computer room currently houses many of these PCs; these rooms are directly and primarily for graduate students in the Statistics Department. In addition, all student offices have limited computer facilities. For further information, consult the department’s computing policies (http://www.stat.uchicago.edu/local/computing/policies/index.shtml).

Statistics Throughout the University
In addition to the courses, seminars, and programs in the Department of Statistics, courses and workshops of direct interest to statisticians occur throughout the University, most notably in the programs in statistics and econometrics in the Booth School of
Business (http://www.chicagobooth.edu) and in the research programs in Health Studies (http://health.bsd.uchicago.edu), Human Genetics (http://genes.uchicago.edu), Financial Mathematics and Econometrics (http://stevanovichcenter.uchicago.edu/page/seminars), Computer Science (http://www.cs.uchicago.edu), Economics (http://economics.uchicago.edu) and NORC (http://www.norc.uchicago.edu) (formerly the National Opinion Research Center). The large number of statistics related seminars (http://galton.uchicago.edu/seminars/index.shtml) is perhaps the best indication of the vibrancy of the statistics research community here at the University of Chicago.
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Trajan.

Times was used instead of Palatino.

The editor may contact Leepfrog for a draft with the correct fonts in place.