STATISTICS AND DATA SCIENCE

219 Prospect Street, 203.432.0666
http://statistics.yale.edu
M.A., M.S., Ph.D.

Chair
Yihong Wu

Acting Chair
Daniel Spielman [Sp]

Directors of Graduate Studies
John Emerson (219 Prospect, john.emerson@yale.edu)
Zhou Fan (219 Prospect, zhou.fan@yale.edu)

Professors  Donald Andrews (Economics), Andrew Barron, Jeffrey Brock (Mathematics),
Joseph Chang, Katarzyna Chawarska (Child Study Center), Xiaohong Chen (Economics),
Nicholas Christakis (Sociology), Ronald Coifman (Mathematics), James Duncan
(Radiology and Biomedical Imaging), John Emerson (Adjunct), Alan Gerber (Political
Science), Mark Gerstein (Molecular Biophysics and Biochemistry), Anna Gilbert, John
Hartigan (Emeritus), Edward Kaplan (School of Management), Harlan Krumholz
/Internal Medicine), John Lafferty, Zongming Ma, David Pollard (Emeritus), Nils
Rudi (School of Management), Jasjeet Sekhon, Donna Spiegelman (Biostatistics),
Daniel Spielman, Hemant Tagare (Radiology and Biomedical Engineering), Van Vu
(Mathematics), Yihong Wu, Heping Zhang (Biostatistics), Hongyu Zhao (Biostatistics),
Harrison Zhou, Steven Zucker (Computer Science)

Associate Professors  P.M. Aronow, Forrest Crawford (Biostatistics), Joshua Kalla
(Political Science), Amin Karbasi (Electrical Engineering), Vahideh Manshadi (School of
Management/Operations), Ethan Meyers (Visiting), Sekhar Tatikonda

Assistant Professors  Elisa Celis, Sinho Chewi, Zhou Fan, Melody Huang (Political
Science), Roy Lederman, Lu Lu, Theodor Misiakiewicz, Omar Montasser, Fredrik
Savje (Political Science), Dustin Scheinost (Radiology and Biomedical Imaging), Ramina
Sotoudeh (Sociology), Andre Wibisono (Computer Science), Zhuoran Yang, Ilker
Yildirim (Psychology), Ilias Zadik

FIELDS OF STUDY
Fields of study include the main areas of statistical theory (with emphasis on
foundations, Bayes theory, decision theory, nonparametric statistics), probability
theory (stochastic processes, asymptotics, weak convergence), information theory,
bioinformatics and genetics, classification, data mining and machine learning, neural
nets, network science, optimization, statistical computing, and graphical models and
methods.

SPECIAL REQUIREMENTS FOR THE PH.D. DEGREE IN
STATISTICS AND DATA SCIENCE
There is no foreign language requirement. Students take at least twelve courses, usually
during the first two years. The department requires that students take S&DS 625,
Statistical Case Studies, and S&DS 626, Practical Work. The department strongly recommends that students take:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;DS 551</td>
<td>Stochastic Processes</td>
<td>1</td>
</tr>
<tr>
<td>S&amp;DS 600</td>
<td>Advanced Probability</td>
<td>1</td>
</tr>
<tr>
<td>S&amp;DS 610</td>
<td>Statistical Inference</td>
<td>1</td>
</tr>
<tr>
<td>S&amp;DS 612</td>
<td>Linear Models</td>
<td>1</td>
</tr>
<tr>
<td>S&amp;DS 631</td>
<td>Optimization and Computation</td>
<td>1</td>
</tr>
<tr>
<td>S&amp;DS 632</td>
<td>Advanced Optimization Techniques</td>
<td>1</td>
</tr>
<tr>
<td>S&amp;DS 661</td>
<td>Data Analysis</td>
<td>1</td>
</tr>
</tbody>
</table>

Substitutions are possible with the permission of the director of graduate studies (DGS); courses from other complementary departments such as Mathematics and Computer Science are encouraged. With the permission of the DGS and under special circumstances, appropriate courses may be taken at the undergraduate level in departments outside of Statistics and Data Science to fulfill these elective requirements.

The qualifying examination consists of three parts: a written report on an analysis of a data set, one or more written examination(s), and an oral examination. The examinations are taken as scheduled by the department. All parts of the qualifying examination must be completed before the beginning of the third year. A prospectus for the dissertation should be submitted no later than the first week of March in the third year. The prospectus must be accepted by the department before the end of the third year if the student is to register for a fourth year. Upon successful completion of the qualifying examination and the prospectus (and meeting of graduate school requirements), the student is admitted to candidacy. Students are expected to attend weekly departmental seminars.

Students normally serve as teaching fellows for several terms to acquire professional training. All students are required to be teaching fellows for a minimum of two terms, regardless of the nature of their funding. The timing of this teaching is at the discretion of the DGS.

COMBINED PH.D. PROGRAM

The Department of Statistics and Data Science also offers, in conjunction with the Department of Political Science, a combined Ph.D. in Statistics and Data Science and Political Science. For further details, see Political Science.

MASTER’S DEGREES

Three different M.A. in Statistics are offered. All require completion of eight term courses approved by the DGS; of which one must be in probability, one must be in statistical theory, and one must be in data analysis. The remaining five elective courses may include courses from other departments and, with the permission of the DGS and under special circumstances, appropriate courses may be taken at the undergraduate level in departments outside of Statistics and Data Science.

M.A. in Statistics (en route to the Ph.D. in Statistics and Data Science) This degree requires an average grade of HP or higher, and two terms of residence.
M.A. in Statistics (en route to the Ph.D. in other areas of study) Pursuit of this degree requires an application process managed by the DGS of Statistics and Data Science followed by approval from the DGSs from both programs and the cognizant Graduate School dean. All eight courses for this degree must earn grades of HP or higher. This degree also has an academic teaching fellow requirement, to be determined by the DGSs from both programs and the cognizant graduate school dean.

Terminal M.A. in Statistics Students are also admitted directly to a terminal master of arts program in Statistics. Students must earn an average grade of HP or higher and receive at least one grade of Honors. Full-time students must take a minimum of four courses per term. Part-time students are also accepted into the program. All students are expected to complete two terms of full-time tuition and residence, or the equivalent, at Yale. See Degree Requirements: Terminal M.A./M.S. Degrees, under Policies and Regulations.

Terminal M.S. in Statistics and Data Science Students are also admitted directly to a terminal master of science program in Statistics and Data Science. To qualify for the M.S., the student must successfully complete an approved program of twelve term courses with an average grade of HP or higher and receive at least two grades of Honors, chosen in consultation with the DGS. With the permission of the DGS and under special circumstances, appropriate courses may be taken at the undergraduate level in departments outside of Statistics and Data Science to fulfill elective requirements. Full-time students must take a minimum of four courses per term. Part-time students are also accepted into the program. All students are expected to complete three terms of full-time tuition and residence, or the equivalent, at Yale. See Degree Requirements: Terminal M.A./M.S. Degrees, under Policies and Regulations.

Program information is available online at http://statistics.yale.edu.