Statistics

Statistics is part of the Mathematics, Statistics, and Computer Science Department (MCS), the largest department at Macalester. The department has 16 full-time faculty members and approximately 80 graduating majors per year. The department has close ties with economics, biology, chemistry, physics, neuroscience, and many of the social sciences through the college-wide quantitative thinking program. Students may major in applied math and statistics, or minor in statistics or data science.

Statistics Program

The major track in applied mathematics and statistics emphasizes modeling, statistics, and scientific computing, and prepares students with state-of-the-art skills applicable to all areas of the natural and social sciences. The statistics minor prepares students with the same skills, and supports their primary interests. Statistics minors are majors from many areas, including math, economics, psychology, and geography.

In 2015, the department introduced a new state-of-the-art minor in Data Science, which combines skills from statistics and computer science as they are applied to a domain area that uses big data.

Faculty


Tom Halverson, MCS chair, (PhD, University of Wisconsin–Madison), algebra and combinatorics

Vittorio Addona (PhD, McGill University) is interested in the estimation of incidence rates using prevalence data, post-election vote tabulation audits, and a variety of sports statistics topics. He is always interested in finding new applied problems to work on with his students, who have presented their work at national conferences and published in academic journals.

Alicia Johnson (PhD, University of Minnesota) teaches courses on applied and theoretical statistics as well as probability. She enjoys the vast applications of statistics and researches the use of computer simulation for exploring complicated statistical models via Markov chain Monte Carlo methods.

Danny Kaplan (PhD, Harvard University) coordinates the applied mathematics and statistics major.

For more on the following faculty, see the academic updates for Mathematics and Computer Science.

Andrew Beveridge (PhD, Yale University), combinatorics, graph theory, probabilistic methods

Daniel Flath (PhD, Harvard University), number theory, analysis, and algebra

Karen Saxe (PhD, University of Minnesota), geometric and topological data analysis, image analysis

Resources

Classroom labs feature 60 Mac and Windows workstations, high-end research and educational software, and high-speed fiber-optic network links to campus and Internet resources.

Research labs:
- The XMAC (eXperiment, Modeling, Analysis, and Computation) Lab integrates experimental and theoretical mathematical modeling.
- The Social Computing Systems Lab
- The Data Exploration Lab
- The Robotics Lab
- dsTRAIln: the Data Science Training Lab
- 3D Printing Lab

Public Artworks:
On display in the MCS department are the department’s square-wheeled bicycle and a 6,000-pound granite sculpture, “Invisible Handshake,” resplendent with negative curvature.

Student-Faculty Research

Statistics students collaborate extensively with professors through paid summer research supported by grants from Macalester and agencies such as the National Science Foundation, the Keck Foundation, and the Howard Hughes Medical Institute. For example: Justin Sims ’14 (Bronx, N.Y.) and Professor Victor Addona published “Hurdle Models and Age Effects in the Major League Baseball Draft” in the Journal of Sports Economics.

Summer Research

Several students each year take part in summer research both on and off campus, including:

Cory Stern ’16 (Chicago), Yuqi Ren ’15 (Jiangsu, China), Paul Yeo ’15 (Temple City, Calif.), embedded data scientists, Howard Hughes Medical Institute Grant, Macalester College
Newscycle Solutions, data analyst intern
Ana Lindholm ’16 (New Ulm, Minn.)

Minnesota Department of Health, data scientist
Akanksha Dua ’16 (Calcutta, India), REU, Institute for Mathematics and its Applications, Minneapolis

Special Activities and Awards
We have a lively seminar, often oriented for students, and a weekly department tea. The annual Math & Society Lecture brings internationally known speakers to campus to talk about how the mathematical sciences show up in a broad variety of fields.

MSCS students participate in competitions, including ACM’s programming competitions, the sectional competition of the Mathematical Association of America (MAA), and the Putnam competition. Macalester students are regular contributors and awardees at the JMM Undergraduate Poster Session.

Professors Bressoud, Flath, Halverson, Hutchinson (emeritus), and Saxe have received the MAA’s Award for Distinguished College or University Teaching of Mathematics. Professors Kaplan, Topaz, and Saxe have received Macalester’s Rossman Excellence in Teaching Award. Professor Bressoud has received Macalester’s Thomas Jefferson Award. Professors Bressoud, Halverson, and Topaz have received the Macalester Trustees’ Award. Professor Saxe was the 2013–14 Education Policy U.S. Congressional Fellow.

Internships
Three-quarters of all MSCS majors who graduated in May 2016 held at least one internship while at Macalester. Some recent examples are:
Akanksha Dua ’16 (Calcutta, India), Minnesota Department of Health, data scientist
Ana Lindholm ’16 (New Ulm, Minn.), Newscycle Solutions, data analyst intern

Statistics
Sara Staszak ’14 (Indianapolis, Ind.), MAXIMA REU, Macalester College and the Institute for Mathematics and its Applications, Minneapolis
Sasha Indarte ’13 (Minneapolis), Research Experience for Undergraduates (REU), Rice University
Jonathan Bassen ’11 (Shorewood, Wis.), UCLA program “Research in Industrial Projects for Students,” Berlin, Germany
Amelia McNamara ’10 (Minneapolis), REU, Institute for Mathematics and its Applications, Minneapolis

After Macalester
Elizabeth Bacarella ’16 (Bryn Mawr, Pa.) works for Amazon.
Haroon Bokhari ’16 (Lahore, Pakistan) works for Wells Fargo Securities in New York City.
Akanksha Dua ’16 (Calcutta, India) works for Analysis Group in Boston.
Stephanie Duong ’16 (Riverside, Calif.) is going to work at the Mayo Clinic, Rochester, Minn.
Ben Goldman ’16 (Goldens Bridge, N.Y.) is a predoctoral fellow at the Stanford Institute for Economic Policy Research at Stanford University.
Cory Stern ’16 (Chicago) is joining Analysis Group in Chicago.
Khanh Long Tran ’16 (Hanoi, Vietnam) works for J.P. Morgan in New York City.
Anna Winkler ’16 (Davenport, Iowa) works for Thrivent Financial.
Issa Ali ’15 (Minneapolis) is a research fellow at Mayo Clinic, Rochester, Minn.
Suzanne Dufault ’15 (Fosston, Minn.) is in the PhD program in biostatistics at UC–Berkeley.
Brittany Ehmann ’15 (Island Lake, Ill.) is pursuing a master’s in electrical and computer engineering at the University of Minnesota.
Henry Fremont ’15 (Webster Groves, Mo.) is a data engineer at Epic Systems in Madison, Wis.

Noah Schoenberg ’16 (Bala Cynwyd, Pa.), CoCreateX, venture analyst
Jingjing Yang ’16 (Shanghai, China), Carlson Wagonlit Travel Solutions Group, data & analytics intern
Issa Ali ’15 (Minneapolis), Massachusetts General Hospital
Alee Halvorson ’15 (Maple Grove, Minn.), Minnesota Department of Health
Ivana Marinic ’15 (Vrbace, Croatia), Work Effects
Shivangi Pattnaik ’15 (Bhubaneswar, India), TCF National Bank
Ha Song Pham ’15 (Ho Chi Minh City, Vietnam), Metro Transit
Joseph Sengeh ’15 (Freetown, Sierra Leone), 3M Corporate Headquarters

Alee Halvorson ’15 (Maple Grove, Minn.) is a statistical researcher at Mayo Clinic, Rochester, Minn.
Ivana Marinic ’15 (Vrbace, Croatia) is in the PhD program in computer science at University of Chicago.
Bryan Martin ’15 (Iowa City, Iowa) is in the PhD program in statistics at the University of Washington.
Kyla Martin ’15 (Madison, Conn.) is a Residential Life intern at Stony Brook University.
Sam Naden ’15 (Middleton, Wis.) is a software engineer at Thomson Reuters.
Damion Prendergast ’15 (Manchester, Jamaica) is in the transfer pricing department at EY (Ernst & Young) in Minneapolis.
Dan Shi ’15 (Loveland, Ohio) is in research and development at Procter & Gamble.
Christian Smith ’15 (Menomonie, Wis.) is pursuing a PhD in education policy at the University of Wisconsin–Madison.
Iris Vrioni ’15 (Elbasan, Albania) is a statistical analyst at Analysis Group in Chicago.
Justin Wasik ’15 (Park Ridge, Ill.) is in marketing research for the Chicago White Sox.
Yingtong Xie ’15 (Chengdu, China) is pursuing a PhD in economics at the University of Wisconsin–Madison.
Clark Jacobson ’14 (Harvard, Mass.) is working as a search engine optimization analyst for TripAdvisor in Boston.
Amy Janett ’14 (Verona, N.J.) is pursuing a PhD in applied math at the University of Delaware.
Christa Nilson ’14 (Springfield, Mass.) is teaching and earning a master’s degree with Math for America in New York.
Justin Sims ’14 (Bronx, N.Y.) began as a statistical analysis intern for the New York Yankees and now is video manager in player development for the Yankees.
Junyi Wang ’14 (Shanghai, China) is pursuing a master’s in statistics at Stanford University.