

Graduate Programs in Statistics



Department of Mathematics and Statistics

Statistics may be defined as the science of extracting information from data. Technological developments in the information age have demanded methodology for the efficient extraction of reliable statistics from complex databases. As a result, Statistics has become one of the most pervasive of all disciplines.

Statisticians are consistently rated among the top jobs when factors such as salary, working conditions, and interest are combined. The public and private sectors rely on statistical information for such purposes as decision making, regulation, control and planning. For example, statistical methods underlie the management of the fisheries industry. All new drugs must undergo rigorous clinical testing on human patients, which requires statistical designs and analysis before they can be approved for public use. Success in increasing the world's supply of food has relied on the discovery of new and improved grains through the use of randomized statistical field trials. Some major application areas for statistics today are the production of government statistics,

pharmaceutical research, industrial quality management, risk assessment in insurance (actuarial statistics), environmental monitoring and assessment, and medical research.

MS in statistics

The Master of Science in Statistics is designed for students interested in government jobs and industrial work in statistics, teaching statistics at the community college level, or pursuing a Ph.D. in statistics or mathematical sciences. Assuming a strong background in mathematics, the program prepares students for the degree with both theoretical and applied courses in statistics. Approved advanced statistically based courses in other Departments may also be included in the program. Particularly close cooperation with the Oregon Health & Science University (OHSU) Public Health program, including Epidemiology/Biostatistics track, is maintained. In most cases a program of study leading to the MS degree in Statistics can be completed in two academic years. Several forms of graduate support are available, including, but not limited to, Teaching Assistantships, Research Assistantships, Internships and Scholarships. The Department may be contacted for details.

Ph.D. in mathematical sciences

The Ph.D. in Mathematical Sciences is a scholarly degree aimed at developing researchers who are trained in mathematics or statistics, are culturally literate in at least one other discipline, and who can communicate effectively with people in other professional cultures. The program is flexible, learner driven, and provides participants with a structured environment, professional guidance, and advising support. The candidates become not only well grounded in mathematics and/or statistics but also conversant with at least one other discipline by dedicating approximately 25% of credit hour requirements to professional development, cross-disciplinary experiences, and allied area coursework. The program is versatile enough so that, with proper choice of course work and dissertation project, the same quality training as a traditional Ph.D. program in statistics can be attained. Its uniqueness comes from the fact that it accommodates a broad range of interdisciplinary partners including Computer Science, Engineering, Physics, Chemistry, Biology, Economics, Finance, Urban Studies and Planning, Public Health, Epidemiology and others. The courses are chosen with the assistance of the allied area advisor to form a coherent area of study directly relevant to the student's goals. This experience is also reflected in the thesis and furthered in a cross-disciplinary seminar/internship experience.

Graduate Certificate in applied statistics

The Graduate Certificate in applied statistics is intended for students who need to develop a depth of understanding of statistical methods for the design of experiments and analysis of data. It is expected that students who earn this certificate will be capable of performing sophisticated statistical analysis and modeling of problems within their particular discipline. They would also be expected to be able to provide consultation in the

application of statistical methods for research purposes and in the solution of practical problems. The program of study leading to this certificate requires the completion of a minimum of 24 credit hours of course work. Typically, students would pursue the program in conjunction with a disciplinary graduate program. However, it is possible to pursue just the graduate certificate.

CORE STATISTICS COURSES

- Introduction to Mathematical Statistics
- Applied Regression Analysis
- Experimental Design
- Statistical Consulting
- Applied Multivariate Analysis
- Computer Intensive Methods
- Sampling Theory and Methods
- Categorical Data Analysis
- Reliability Theory
- Survival Analysis
- Nonparametric Methods
- Advanced Mathematical Statistics
- Applied Probability
- Theory of Linear Models
- Stochastic Processes and Probability Theory
- Longitudinal Data Analysis

Core statistics faculty

Brad Crain – Ph.D. 1972 Oregon State University
Mathematical Statistics, Probability, Population Size

Robert Fountain – Ph.D. 1985 University of New Mexico
Mathematical and Applied Statistics (Estimation Theory, Sampling Theory, Multivariate Analysis)

Jong Sung Kim - Ph.D. 1999 University of Iowa
Survival Analysis, Nonparametric and Semiparametric Models, Variance Estimation, Biostatistics

Subhash Kochar – Ph.D. 1979 Panjab University
Mathematical Statistics, Reliability Theory, Stochastic Orders, Nonparametric Methods, Order Restricted Inference

Yunming Mu - Ph.D. 2005 University of Illinois at Urbana-Champaign
Quantile Regression, Transformation Models, Semiparametric Modeling, Longitudinal Data Analysis.

Mara Tableman – Ph.D. 1984 Pennsylvania State University
Survival Analysis, Robustness, Rank Based Procedures, Biostatistics

Adjunct statistics faculty

Farag Abdel-Salam Attia – Ph.D. 1969 Oregon State University
Stochastic Processes - Theory and Applications.

Dongseok Choi (**OHSU**) -Ph.D. 1999 University of Chicago
Biostatistics, Statistical Genomics/Proteomics, Time Series, Spatial Statistics, Environmental Statistics

Jodi Lapidus (**OHSU**) -Ph.D. 1998 University of New Mexico
Categorical Data Analysis, Multivariate Methods, Epidemiology, Public Health, Analysis Methods for Genomic and Proteomic Data

Motomi Mori (**OHSU**) -- Ph.D. 1989 University of Iowa
Longitudinal Data Analysis, Survival Analysis, Clinical Trials, Statistical Methods for Genomics Data, Population Genetics

Roger Nelsen (**Lewis and Clark College**) - Ph.D. Duke University 1969
Multivariate Statistical Models, Copulas, Dependence Concepts and Measures.

Portland State University

Portland State is an urban, comprehensive, rapidly developing and expanding research university. It is the largest university in Oregon, with over 20,000 students and more than 100 undergraduates, master's and doctoral degrees. The campus is centered on the beautiful, tree-lined Park Blocks in downtown Portland, close to museums, cultural events, shopping, and walks along the Willamette River or in old-growth Forest Park. A variety of housing options convenient to campus are available for both faculty and students. For more information visit the university web site, <http://www.pdx.edu>

Portland

Portland is a lovely, livable city, often described as European in character. It is a city of trees, parks, and friendly neighborhoods, with excellent public schools and modern transportation systems. Within 30 to 90 minutes of Portland one can visit the beautiful Oregon Coast, Mount St. Helens, or the Eastern Oregon High Desert, engage in hiking or

world-class wind surfing in the Columbia River Gorge, or find year-around skiing on Mt. Hood. It has been said that the city of Portland is a place where people choose to live.

For more information

The Department of Mathematics and Statistics at Portland State University offers many courses in mathematics, statistics and mathematics education. For more information about these and other programs, including details on applications, employment and financial aid, please visit our web site, <http://www.mth.pdx.edu>, or contact the Department of Mathematics and Statistics by calling 1-503-725-3621.

"I recently earned a Graduate Certificate in Applied Statistics from Portland State University. I took a course from a professor who later recommended me to my current job. The skills I learned through the Graduate Statistics Certificate coursework gave me the knowledge, skills and experience I needed to qualify for my current job as a data manager/research coordinator. I would highly recommend this program."

Jodi Brekhus '03

"I graduated in 2001 with a Master's Degree from Portland State University. The Master's program is very strong both on the applied side as well as the theoretical side. It gave me a very strong foundation before starting my PhD in statistics at the University of Washington. I would highly recommend this program!"

Raphael Gottardo '01

"I joined the Master's program at Portland State University in 2001. The program offers a variety of applied courses, which include biostatistics courses offered at the Oregon Health & Sciences University. Through my coursework, I developed strong theoretical and applied skills in statistics, which later helped me obtain a position as a staff biostatistician for the Biostatistics & Bioinformatics Shared Resource at OHSU. I am also currently enrolled in the Ph.D. in Mathematical Sciences at PSU. In my opinion, the Master's and PhD programs in Mathematics/Statistics are well tailored for students with strong interest in applied statistics."

Solange Mongoue '04