The University of Connecticut
Department of Statistics
Graduate Program

Founded in 1963, the Department is one of the major statistics departments in the Northeast and has national and international recognition in both teaching and research. Core faculty have research interests in major areas of probability and statistics, spanning virtually all modern areas of statistical applications.

Graduate education has been a traditional strength of the Department with over 38 Ph.D. and 81 M.S. degrees awarded in the last 10 years. The graduate program balances theory, methods and applications, including a solid foundation in mathematical statistics, probability theory, statistical methodology and modeling, data analysis, and computational statistics. Elective courses are regularly given in active areas of research with emphasis on modern and model based statistical methodology.

Graduates of the program promptly move into attractive positions in academics, government, and industry, specific areas including biology, medicine, business, economics, engineering, and the social sciences.

Programs of Study

The Department of Statistics offers work leading to the M.S. and Ph.D. degrees. Both programs include training in statistical application and in theory, and both give students sufficient flexibility to pursue their special interests and time to take courses in other departments.

The M.S. program in Statistics requires 8-10 courses, depending on the student's undergraduate record. While completing the M.S. degree within a year is possible, most students take three or four semesters. The core courses include mathematical statistics, linear models, design of experiments, and applied statistics. Students are encouraged to become involved in the statistical consulting work done by members of the department.

M.S. program with Biostatistics concentration requires 10 courses, of which six of the core courses are the same as in our M.S. program in Statistics, four of the other include Introduction to Biostatistics, Clinical Trials, Survival Analysis and one elective course, which should be a biostatistics related course such as bioinformatics, epidemiology or genetics, chosen with the approval of the major advisor.

The doctoral program emphasizes development of the ability to create new results in statistical methods, statistical theory, and probability. The course work typically consists of at least sixteen courses beyond the bachelor's degree, including mathematical statistics, linear models, statistical inference, applied statistics, real analysis, and probability. After completing the necessary course work and a sequence of examinations, the Ph.D. candidate must write a dissertation providing an original contribution to the field of statistics or probability. The dissertation may be predominantly the development of novel statistical methodology for an area of application.

Research Facilities

The Department is housed in the College of Liberal Arts and Sciences Building. The Department has a teaching computer lab and a research computer lab. Recently, the Department has installed in the research lab three Intel-based Linux workstations dedicated to large scale numerical computing and statistical simulation. It has also received a SCREMS grant from the National Science Foundation with matching support from the College and the University. With the funding, the Department has replaced all the PCs in the research lab with 15 new Dell OptiPlex double dual-cores PCs with Window XP operating systems. Within the next year, the Department will also use the funding to purchase a Linux based computer cluster with 30 or more computing nodes, each with double quad-cores. With these changes, the computing facilities of the Department that are accessible to the graduate students, the visiting scholars, and the faculty members are operated by Window XP or Linux operating systems.

The Department has transferred all its email, web and file sharing services to an Intel-based Linux server named MERLOT, which is a Dell PowerEdge 2550 rack mounted server with dual 3 GHz Xeon processors and a RAID disk array.

A large software base is now available in either the PCs or the Linux workstations in both labs, which includes SAS, S-Plus, SPSS, GLIM, MINITAB, Mathematica, Maple, IMSL (Fortran and C), R, WinBUGS, as well as other packages and languages.

The Department's computers are managed and maintained by four lab managers: one Linux quarter time operations manager (Tim Ruggerieri), one PC quarter time operations manager from the office of the Dean of the College of Liberal Arts and Sciences, one student Linux cluster manager, and one student Webmaster. The computer management team maintains, installs, and upgrades the operating systems and software, and provides the service of weekly tape-backing up as well as daily trouble-shooting of system problems.

Financial Aid

Graduate teaching and research assistantship and fellowship-assistantship combinations are available, covering tuition and health benefits and paying a stipend between $19,000 and $22,500 for the academic year 2008-2009. Some internships and financial aid are available in the summer. Students with full aid generally take three courses a semester. Those with a fellowship-assistantship may take four courses. Outstanding students may be awarded University predoctoral fellowships. Advanced students are considered for research assistantship.

Cost of Study/Living and Housing Costs

Please refer to the Graduate School website for information on tuition and housing, http://www.grad.uconn.edu/tuition.html

Student Group

There are roughly 42 graduate students in the department, approximately half working for the M.S. degree and half for the Ph.D. degree. The department has been granting about three Ph.D. degrees a year. All graduate students and faculty have office space within the departmental area, creating an open, informal environment. Of the 21 Ph.D. recipients in the last five years, 10 have academic tenure track positions, 5 in the government and 6 are in industry. The M.S. recipients have positions with the government, industry and business, and academic research centers. As predicted by the National Science Foundation, employment opportunities for persons with degrees in statistics continue to be excellent.

Location

The University of Connecticut's main campus is in northeastern Connecticut, 25 miles from Hartford, in an attractive rural area. It is about 1-1/2 hours by car from Boston and 3 hours from New York City.

The University

The University of Connecticut, which celebrated its centennial in 1981, is the state of Connecticut's land-grant institution. It has about 28,000 students, including more than 7,000 in graduate study. Its substantial, but not overwhelming, size allows the University to offer a broad curriculum and an excellent program of concerts, plays, and other cultural events.

The Department of Statistics was founded in 1963. Its faculty members conduct an active and prolific research program in which students are involved as soon as possible.

Application

Most of our students come from undergraduate mathematics or statistics majors. Persons with degrees in fields other than statistics and mathematics are encouraged to apply. While there are no official course requirements for admission to the M.S. program, a level of mathematical sophistication is necessary for acceptable progress. In our experience, at the minimum, this amounts to three semesters of calculus and one semester of linear algebra. Course work to remedy deficiencies can be taken while in the program.

Admission to the Graduate School normally requires an undergraduate cumulative grade point average of 3.0 or higher out of 4.0, either for the entire undergraduate career or last two years of undergraduate study or its equivalent. An outstanding final undergraduate year can earn regular graduate status. The Graduate School will consider provisional status for those applicants with a GPA of at least 2.6.

Doctoral candidates seeking financial aid are required to submit scores on the GRE. Also, note especially the need for scores on the TOEFL (or IELTS) and GRE Aptitude Examinations taken within five years from the date of application. These are essential before your application can be considered. A minimum score of 550 for the paper-based TOEFL, 213 for the computer-based TOEFL or 80 for the internet-based TOEFL is necessary for admission to The University of Connecticut. A minimum score of 6.5 of IELTS may be used to substitute for TOEFL. With regard to the GRE scores, we consider applicants with a verbal score above median and a quantitative score ranked in the top twenty five percent for financial support. While the fall application deadline is June 1 (April 1 for international applicants), financial aid decisions are usually made in March. A completed application by February 1 is required for consideration of financial aid.

Application for Graduate School can be found at the Graduate School website (http://www.grad.uconn.edu) or by contacting the Graduate Admissions Office, 438 Whitney Road, Ext. Unit 1016, Storrs, CT 06269-1006; telephone: 860-486-3617; fax: 860-486-6739.

The Department has additional information required; see Important Reminders on page 22 of this brochure. They can also be downloaded from (www.stat.uconn.edu) and submitted electronically. For correspondence and further information contact:

Director of Graduate Studies
Department of Statistics, University of Connecticut
215 Glenbrook Road, U-4120
Storrs, CT 06269-4120
Telephone: (860) 486-3413 e-mail: statadm2@uconn.edu

The Faculty and their Research

Richard Bass, Professor, (joint with the Department of Mathematics). *Probability Theory, PDE, Harmonic Analysis.*

Joseph C. Cappelleri, Pfizer, Inc., Global Research *and* Development. Adjunct Faculty. *Meta Analysis, Psychometry and Epidemiology.*

Ming-Hui Chen, Professor. *Bayesian statistical methodology and computation, Categorical data analysis, DNA Microarray data analysis, Missing data analysis (EM, MCEM and Bayesian), Monte Carlo methodology, Prior Elicitation, Statistical methodology for prostate cancer data, Statistical Modeling, Survival data analysis and Variable selection.*

Zhiyi Chi, Associate Professor. *Applied Probability, Stochastic Processes, Large Deviations.*

Dipak K. Dey, Professor and Head of Department. *Bayesian Modeling, Computational Statistics, Decision Theory, Multivariate Analysis, Reliability and Survival Analysis, Statistical Shape Analysis, and Statistical Genetics.*

Evarist Giné, Professor (joint with the Department of Mathematics). *Probability in Infinite Dimensions, Asymptotic Statistics, Empirical Processes and Applications.*

Joseph Glaz, Professor and Associate Department Head, Director of Graduate Studies. *Applied probability, geometrical probability, probability approximations, probability inequalities, parametric bootstrap, sequential analysis, simultaneous inference*

Ofer Harel, Assistant Professor. *Methods for Handling Incomplete Data, Diagnostic Accuracy, Longitudinal Studies, Bayesian Methods, Sampling Techniques, Mixture Models, Latent Class and Latent Transition Analysis, Statistical Consulting, Biostatistics and Public Health Applications.*

Kent Holsinger, Professor (joint with the Department of Ecology and Evolutionary Biology). *Statistical Genetics.*

Lynn Kuo, Professor. *Bioinformatics and Biostatistics*, *Bayesian Computation, Survival Analysis, Nonparametric Bayesian Statistics, Software Reliability, Longitudinal Data Analysis, Survey Sampling.*

Suman Majumdar, Associate Professor (Stamford Campus). *Metrization of Weak Convergence, posterior asymptotics, psychometry, inference in SDEs*.

Cyr Emile M'Lan, Assistant Professor. *Bayesian Sample Size Calculation, Microarray data analysis, length-bias data analysis.*

Nitis Mukhopadhyay, Professor. *Applied Probability, Clinical Trial, Environmental Sampling, Multiple Comparisons, Multivariate Analysis, Selection and Ranking, Sequential Analysis, Simultaneous Inference.*

Vladimir Pozdnyakov, Assistant Professor (Hartford Campus). *Limit Theorems, Sequential Analysis, Mathematical Finance, Occurrence of Patterns.*

Bonnie K. Ray, IBM, T.J. Watson Research Center, Adjunct Faculty. *Time Series Modeling and Forcasting, Statistical Analysis of software data, statistical computing.*

Nalini Ravishanker, Professor and Director of Undergraduate Program. *Time Series modeling; Times-to-events Analysis; Inference for Stable Processes; Signal Processing; Simultaneous Inference Procedures; Statistical Methods in Actuarial Science, Marketing, Environmental Engineering and Transportation Engineering.*

Naitee Ting, Pfizer, Inc., Global Research and Development, Adjunct Faculty. *Biostatistics, variance component models, drug safety assessment.*

Gautam Tripathi, Associate Professor (joint with Economics). *Econometrics theory, microeconometrics.*

Richard A. Vitale, Professor.
Convex-geometric methods in probability and statistics, stochastic geometry, inequalities.

Stephen Walsh, UConn Health Center, Adjunct Faculty. *Biostatistics, assessment of diagnostic tests, clinical trials.*

Yazhen Wang, Professor. *Financial Econometrics, Wavelets for Change-Points, Image Processing, and Long-Range Dependent Data, Spatial Statistics and Real Estate, Locally Self-Similar Processes and Long Memory Processes, Order Restricted Statistical Inference.*

Jun Yan, Assistant Professor. *Dynamic Survival Models, Longitudinal Data Analysis, Spatial Statistics, Estimating Functions, Statistical Computing, Biostatistics, Public Health Applications, Econometrics*

Recent Faculty Publications

Richard Bass

R.F. Bass, K. Burdzy, and Z.-Q. Chen, Pathwise uniqueness for a degenerate stochastic differential equation, *Ann. Prob.*, **35** (2007) 2385-2418.

R.F. Bass and A. Lavrentiev, The submartingale problem for a class of degenerate elliptic operators, *Probab. Th. rel. Fields*, **139** (2007) 415-449.

R.F. Bass and J. Rosen, Frequent points for random walks in two dimensions, *Electronic J. Probab.* **12** (2007) 1-46.

R.F. Bass, K. Burdzy, and Z.-Q. Chen, Pathwise uniqueness for a degenerate stochastic differential equation, *Ann. Prob.*, **35** (2007) 2385-2418.

Ming-Hui Chen

(with J.G. Ibrahim and Y.-Y. Chi) 2008. A new class of mixture models for differential gene expression in DNA microarray data. Journal of Statistical Planning and Inference, 138, 387-404.

(With A.V. D'Amico, A.A. Renshaw, M. Loffredo and P.W. Kantoff) 2008. Androgen suppression and radiation vs radiation alone for prostate cancer: a randomized trial. The Journal of the American Medical Association, 299 (3), 289-295.

(With S. Das, S. Kim and N. Warren) 2008. A Bayesian structural equations model for multilevel data with missing responses and missing covariates. Bayesian Analysis, 3, 197-224.

(With S. Kim and D.K. Dey) 2008. Flexible generalized t-link models for binary response Data. Biometrika, 95(1), 93-106.

Zhiyi Chi

On the performance of FDR control: constraints and a partial solution (2007). *Ann. Statist.* 35(4), 1409-1431.

Uniform convergence of exact large deviations for renewal reward processes (2007). *Ann. Appl. Probab.* 17(3), 1019-1048.

Sample size and positive false discovery rate control for multiple testing (2007). *Electronic J. Statist.* 1: 77-118.

Large deviations for template matching between point processes (2004). *Ann. Appl. Probab.* 15(1A): 153-174.

Dipak K. Dey

(With J. Liu) 2007. Hier-archical overdispersed Poisson model with macrolevel autocorrelation. Statistical Methodology, 4, 354-370.

(With J. Liu) 2008. Skew random effects in multilevel binomial models: an alternative to nonparametric approach. Statistical Modelling.

(With U. Diva and S. Banerjee) 2008. Parametric models for spatially correlated survival data for individuals with multiple cancers. Statistics in Medicines, 7, 191-213.

(With S. Ghosh, D. Hill and D. Grant) 2008. A semiparametric modeling approach for the development of metabonomic profile and bio-marker discovery framework. BMC, Bioinformatics, 9:38 doi:10.1186/1471-2105-9-38.

Evarist Giné

(with R. Nickl) 2008. Uniform central limit theorems for kernel density estimators. To appear in Probability Theory and Related Fields.

(With R. Nickl) 2008. A simple adaptive estimator of the integrated square of a density. Bernoulli, 14, 47-61.

(With R. Nickl) An exponential inequality for the distribution function of the kernel density estimator, with applications to adaptive estimation. To appear in Probability Theory and Related Fields.

(With D. Mason) Uniform in bandwidth estimation of integral functionals of the density function. To appear in Skandinavian J. Statist.

Glaz, J.

(with V. Pozdnyakov) 2007. A nonparametric sequential test for distributions with heavy tails. Journal of Statistical Planning and Inference, 137, 869-878.

2007. Scan statistics. In Encyclopedia of Statistics in Quality and Reliability, Ruggeri, F., Kenett, R. and Faltin, F. W. (eds). John Wiley & Sons Ltd, Chichester, UK, pp 1761-1766.

(With Z. Zhang) 2008. Bayesian variable window scan statistics. Journal of Statistical Planning and Inference, doi:10.1016/j.jspi.2005.12.016.

(With M. Guerrero and P. Willett) 2008. Target detection in sensor network using scan statistics. Proceedings 2008 International Conference on Acoustic, Speech and Signal Processing, Las Vegas, Nevada.

Ofer Harel

2007. Inferences on missing information under multiple imputation and two-stage multiple imputation. Statistical Methodology, 4, 75-89. DOI: 10.1016/j.stamet.2006.03.002.

(With X.H. Zhou) 2007. Multiple imputation for comparing accuracies of two competing screening tests in two-phase studies. Statistics in Medicine, 26 (11), 2370-2388. DOI: 10.1002/sim.2715.

(With X.H. Zhou) 2007. Multiple imputation review of theory implementation and software. Statistics in Medicine, 26 (16), 3057-3077. DOI: 10.1002/sim.2787

(With E.F. Schisterman, A. Vexler and M.D. Ruopp) 2008. Monitoring quality control: can we get better data? Epidemiology, 19(4), 621-627.

Lynn Kuo

(with L.Y. Sung, S. Gao, H. Shen, H.Yu, Y. Song, S. L. Smith, C.C. Chang, K. Inoue, J. Lain, A. Li, X. C. Tian, D. P. Tuck, S. M. Weissman, X. Yang, T. Cheng) 2006. Differentiated cells are more efficient than adult stem cells for cloning by somatic cell nuclear transfer. Nature Genetics, 2006, V. 38, No. 11, 1323-1328.

(With F. Yu and M.-H. Chen) 2008. Detecting differentially expressed genes using calibrated Bayes factors. Statistica Sinica, V. 18, 783-802.

(With F. Yu and Y. Zhao) 2008. Statistical methods for identifying differentially expressed genes in replicated microarray experiments: a review. (Chapter 20, in Statistical Advances in the Biomedical Sciences: Clinical Trials, Epidemiology, Survival Analysis and Bioinformatics, Eds: Biswas, A., Datta, S., Fine, J., and Segal, M., Wiley, 341-363.

Cyr Emile M'Lan

(with L. Joseph and D.B. Wolfson) 2006. Bayesian Sample Size Determination for Case-Control Studies. J of the American Statistical Association - Theory and Methods, Vol 101, 760-772.

(With M.O. Orlova, K.B. Majorov, I.V. Lyadova , E.B. Eruslanov, C.M.T. Greenwood, E. Schurr and A.S. Apt. "Constitutive differences in gene expression profiles parallel genetic pattern of susceptibility to tuberculosis in mice". Infection and Immunity,74, 6, 3668-3672.

(With P. Hu, C.M.T. Greenwood and J. Beyene) 2007. Chromosal clustering of periodically expressed genes in plasmodium falciparum. Chapter 8 of "Methods of Microarray Data Analysis V", edited by Patrick McConnell, Simon Lin, and Patrick Hurban, Springer, NY.

(With L. Joseph and D.B. Wolfson) 2008. Bayesian sample size determination for binomial proportions. Bayesian Analysis, 3(2):269-296.

Nitis Mukhopadhyay

2006. MVUE for the mean with one observation: Normal with same mean and variance. *The American Statistician*, 60, 71-74.

2006. Some comments on Hassairi et al.'s 'Implicit Distributions and Estimations'. *Communications in Statistics-Theory & Methods*, 35, 293-297.

(With S. Zacks) 2007. Bounded risk estimation of linear combinations of the location and scale parameters in exponential distributions under two-stage sampling. *Journal of Statistical Planning & Inference, S.N. Roy Centennial Volume*, 137, 3672-3686.

(with S. Zacks) 2007. Distributions of sequential and two-stage stopping times for fixed-width confidence intervals in Bernoulli trials: Application in reliability. *Sequential Analysis*, 26, 425-441.

Vladimir Pozdnyakov

(with J.M. Steele) 2004. On the Martingale Framework for Futures Prices. Stochastic Processes and Their Applications, 109, 69-77.

(With J. Glaz , M. Kulldorff, and J.M. Steele) 2006. Gambling Teams and Waiting Times for Patterns in Two-state Markov Chains. Journal of Applied Probability, 43, 127-140.

(With J. Glaz) 2007. A Nonparametric Repeated Significance Test with Adaptive Target Sample Size. Journal of Statistical Planning and Inference, 137, 869-878.

2008. A Note on Occurrence of Gapped Patterns in I.I.D. Sequences. Discrete Applied Mathematics, 156, 93-102.

Nalini Ravishanker

(with M. Mallick) 2006. Additive Positive Stable Frailty Models. Methodology and Computing in Applied Probability, 8, 541-558.

(With R. Venkatesan and V. Kumar) 2007. Multichannel Shopping – Causes and Consequences. Journal of Marketing, 71, 114-132.

(With N. Kannan) 2007. High Resolution Estimation of DOA's in the Linear Array Model: Gaussian and sub-Gaussian Stable Signals. IET Signal Processing, 1, 35-42.

Richard A. Vitale

Multivariate medians and measure-symmetrization. In: Proceedings, Vardi Memorial Conference. IMS Lecture Notes and Monograph Series, 54, 260-267.

2008. On the Gaussian representation of intrinsic volumes. Stat. Prob. Lett., 78, 1246--1249.

Yazhen Wang

Wang 2006. Selected review on wavelets. In Frontier Statistics, Festschrift for Peter Bickel(H. Koul and J.Fan, eds.), pp. 163-179.

(With J.M. Clapp) 2006. Defining neighborhood boundaries: are census tracts obsolete? Journal of Urban Economics, 59, 259-284.

(With J. Fan) 2007. Multi-scale Jump and Volatility Analysis for High-Frequency Financial Data. Journal of the American Statistical Association, 102, 1349-1362.

Jun Yan

(with O. Stramer) 2007. On simulated likelihood of discretely observed diffusion processes and comparison to closed-form approximation. Journal of Computational and Graphical Statistics, 16(3): 672-691.

Spatial stochastic volatility for lattice data. Journal of Agricultural, Biological, and Environmental Statistics, 12(1): 25-40.

(With M.K. Cowles, S. Wang and M.P. Armstrong) 2007. Parallelizing MCMC for Bayesian spatiotemporal geostatistical models. Statistics and Computing, 17(4): 323--335.

(With J.P. Fine) 2008. Analysis of episodic data with application to recurrent pulmonary exacerbations in cystic firosis patients. Journal of the American Statistical Association, 103: 498-510.

Published Books

Ming-Hui Chen (with J.D. Petruccelli and B. Nandram) 1999. Applied Statistics for Engineers. Text Book, Prentice-Hall, Inc., ISBN 0-13-565953-1.

(With Q.-M. Shao and J.G. Ibrahim) 2000. Monte Carlo Methods in Bayesian Computation. Springer-Verlag, ISBN 0-387-98935-8.

(With J.G. Ibrahim and D. Sinha) 2001. Bayesian Survival Analysis. Springer-Verlag, ISBN 0-387-95277-2.

Dipak K. Dey (with C.R. Rao) 2005. Handbook of Statistics Vol. 25 : Bayesian Thinking, Modeling and Computation. Elsevier Science, Amsterdam.

(With S.K. Upadhyay and U. Singh) 2006. Bayesian Statistics and its Application. Proceedings of the International Conference on Bayesian Statistics, Varanasi, India.

Joseph Glaz (with R. Baeza-Yates, H. Gzyl, J. Huesler and J.L. Palacios) 2005. Recent Advances in Applied Probability. Springer Science and Business Media, NY.

Nitis Mukhopadhyay 2000. Probability and Statistical Inference (ISBN #0-8247-0379-0). Marcel Dekker, Inc., New York.

(With S. Datta and S. Chattopadhyay) 2004. Applications of Sequential Methodologies. Marcel Dekker, Inc., New York.

(With Basil M. de Silva) 2004. Proceedings of the International Sri Lankan Statistical Conference: Visions of Futuristic Methodologies. Postgraduate Institute of Science,

University of Peradeniya, Sri Lanka and RMIT University, Melbourne, Australia, December 28-30, 2004, ISBN 0 86459 339 2.

2006. Introductory Statistical Inference. Chapman & Hall/CRC Press.

Nalini Ravishanker (with D.K. Dey) 2002. A First Course in Linear Model Theory. Chapman Hall, CRC.

Ph.D. Students and Their Dissertation Titles in the Last Five Years

Student	Dissertation	Current Affiliation
Amitabha Bhaumik, 2003	Dynamic Hierarchical Models with Applications	Bristol-Myers Squibb
Junfeng Liu,2003	On Skew-Elliptical Distributions with Application	Case Western University
Rongwei Fu, 2003	Probabilistic Structure and Statistical Inference for Nonexplicit Population Models of Allele Frequency	Oregon Science and Health Univ.
Anandamayee Majumdar, 2004	Some Problems in Multivariate Spatial and Spatio-Temporal Modeling	Arizona State University
Madhuja Mallick, 2004	Stable Random Family Effects Models for Multivariate Times to Effects Analysis	Merck Research Laboratories
Prashni Paliwal, 2004	Chronological Event Modeling and Computation of Conditional Rates	Bristol-Myers Squibb
Shanshan Wu, 2004	Statistical Model Development Toward Explaining Species Diversity	ING Clarion
Lan Huang, 2004	Bayesian Methods for Analyzing Missing Covariates Data	National Cancer Institute, NIH
Seongho Song, 2005	Hierarchical Bayesian Analysis of Genetic Diversity in Geographically Structured Population	University of Cincinnati
Zhenkui Zhang, 2005	Variable Window Scan Statistics	Liberty Mutual Bank
Hai Xu, 2006	Statistical Inference and Computing for Diffusion Models in Finance	St. Paul Travelers
Zhaohui Liu, 2006	Bayesian Inference for Non-Homogeneous Poisson Process Models for Software Reliability	Novartis
Changhong Song, 2006	Analyzing Longitudinal Data Using Random Effects Models	EMMES Corporation
Samiran Ghosh, 2006	Cluster Classification and Function Estimation for High Dimensional Data Arising from Bioinformatics and Related Domains	Indiana Univ. Purdue Univ. at Indianapolis

Ulysses Diva, 2006	Novel Approaches in Modeling Spatially Correlated Multivariate Data	Bristol-Myers Squibb
Sonali Das, 2006	A New Development of Bayesian Structural Equations Model with Application to VHA Survey Data	Built Environment, CSIR
Feng Guo, 2007	Modeling Genetic Data Using Bayesian Hierarchical Models	Virginia Tech. University
Fang Yu, 2007	Bayesian Methods for High-Throughput Gene Expression Data in Bioinformatics	University of Nebraska
William Pepe, 2007	On Some Bounded Risk Sequential Procedures for Exponential Mean and Normal Density Estimation	AT&T
Pengfei Li, 2007	A Factor and Vector-AR Model for Analyzing High Dimension Volatility for High Frequency Financial Data	
Jaydip Mukhopadhyay, 2007	Mining Tools for High-Dimensional Time Series Data Using Spectral Methods	Bristol-Myers Squibb
Yingmei Xi, 2008	New Development of Bayesian Mature Models for Survival and Survey Data	

Department of Statistics Ph.D. Program

For students entering the program after a Bachelors Degree, typically 16 to 18 courses are required. An individual plan of study is developed by the student and his or her Advisory Committee.

Knowledge of a sequence of core courses is required for all Ph.D. students. These courses are 5585-5685 (Mathematical Statistics), 5505-5605 (Applied Statistics), 5725, 6694 (Linear Models), 6315, 6515 (Theory of Statistics), 6325-6894 (Measure Theory and Probability Theory), 5515 (Design of Experiments), giving a total of 33 credits for core courses. Additional credits can be earned from the list of elective courses.

With regard to the University requirement under Foreign Language, related or supporting area of study, Ph.D. students are encouraged to take courses in Computer Science and Mathematics, as well as in application areas such as Biology or Economics.

The first formal departmental requirement for the Ph.D. program is successfully passing the Ph.D. Qualifying Examination which is a written test of certain basic courses to the program. The next requirement is passing of the General Examination which is given as an oral test and covers aspects of Applied Statistics, Linear Models, Probability Theory and Statistics. The preparation of a dissertation then follows which must present an original contribution to the general area of Statistics and/or Probability. The final requirement of the program is a defense of the Ph.D. dissertation before an audience of interested members of the department.

NOTE: For students arriving with a Bachelor's Degree and receiving financial support from the Department, we propose the following timetable for these examinations:

Ph.D. Qualifying Examination	:	within 3 semesters from start of program.
General Examination	:	within 6 semesters from start of program.
Ph.D. Thesis Defense	:	no later than 5 years from start of program.

Department of Statistics Masters Degree Program Information

The Masters program emphasizes applied statistics, encouraging students to take one course in areas of application. Plans of Study for this degree may be formulated with related work in almost any area, e.g., Biology, Business, Economics, Nutrition, and Psychology to name a few.

Individuals with a Bachelor's Degree in any major are encouraged to apply. Approximately three semesters of full time study are required to complete the Masters Degree, although it is possible for a student with a strong background to finish in a year. A student holding an assistantship, or who is otherwise prevented from carrying a full load of graduate work (normally four courses per semester), generally requires an additional semester to finish.

PREREQUISITES

Although there are no official course requirements for admission to graduate study, a degree of mathematical sophistication is necessary for acceptable progress through the program. This mathematical maturity may be achieved by successful completion of three semesters of calculus and a semester of linear algebra. A background in statistics will be helpful, but is not assumed.

STRUCTURE OF THE MASTER'S PROGRAM

Eight to 10 courses are required depending upon the student's background, where statistics course 5585, 5685, 5505, 5605, 5725 and 5515 are required. The elective courses normally consist of three more courses in statistics and one course is in the area of application. Choices are made with the approval of the candidate's advisor. After taking all required courses, the student must take and pass a Master's Examination. He or she must also demonstrate proficiency in statistical computing. There is no thesis requirement for the Master's Degree.

Typical Plans of Study for the Master's Degree

Two Semesters

Knowledge of Statistics 5585-5685 and some applied statistics is assumed.

I.	Statistics 5505 Statistics 5725 2 Elective or Area of Application Courses	II.	Statistics 5099 Statistics 5605 Statistics 5515 2 Elective or Area of Application Courses

Three Semesters

I.	Statistics 5585 Statistics 5505 1 Elective Course	II.	Statistics 5685 Statistics 5515 Statistics 5605 1 Elective Course
III.	Statistics 5725 2 Elective or Area of Application Courses Statistics 5099 (1 credit)		

Four Semesters

I.	Statistics 5585	II.	Statistics 5685

Statistics 5505
1 Elective Course

Statistics 5515
1 Elective Course

III. Statistics 5725
One or Two Electives or
Area of Application Courses

IV. Statistics 5605
One or Two Electives or
Area of Application Courses
Statistics 5099 (1 credit)

Note: Remedial work in Mathematics may replace elective courses in the first year of a three or four semester program.

Typical Plans of Study for the M.S. with Biostatistics Concentration

Three Semesters

I. Statistics 5585
Statistics 5505
Statistics 5635
(or Statistics 5625, 5645)

II. Statistics 5685
Statistics 5605
Statistics 5515
Statistics 5625
(or Statistics 5635, 5645)

III. Statistics 5725
Statistics 5645
(or Statistics 5625, 5635)
1 Elective Course
Statistics 5099 (1 credit)

Four Semesters

I. Statistics 5585
Statistics 5505
Statistics 5635
(or Statistics 5625, 5645)

II. Statistics 5685
Statistics 5515
Statistics 5625
(or Statistics 5635, 5645)
1 Elective Course

III. Statistics 5725
Statistics 5645
(or Statistics 5625, 5635)

IV. Statistics 5605
1 Elective Course
(or Statistics 5625, 5635 or 5645)
Statistics 5099 (1 credit)

COURSE DESCRIPTIONS

(subject to change)

Statistics 3965. Elementary Stochastic Processes

Prerequisite: Statistics 3025Q or 3375Q or 5585 or consent of instructor.

Conditional probability and expectation, moments and distribution of random sums, transition probabilities of Markov chains, first step analysis of Markov chains, long run behavior of Markov chains, classification of states, homogeneous and nonhomogeneous Poisson processes, interarrival time and waiting time distributions, spatial Poisson process, compound Poisson process, birth and death processes, branching processes, queuing processes with exponential interarrival times and service times.

Statistics 3515Q/5515. Design of Experiments

Prerequisite: A previous statistical methods course and consent of instructor.

Completely randomized, randomized block, Latin squares, nested and repeated measures designs, multiple comparisons, factorial experiments, random and mixed models, confounding and fractional factorials, analysis using SAS computer package.

Statistics 4875. Nonparametric Methods

Prerequisite: Statistics 3375Q or 5585 or consent of instructor.

Intuitive approach and basic concepts, one and two-sample problems, estimation, testing and confidence procedures, small sample and asymptotic distribution theory, Pitman efficiency, K sample problems, rank correlation.

Statistics 5099. Student Seminar/Internship

Statistics 5015. Distribution Theory for Statistics

Prerequisite: Consent of Instructor.

Mathematical foundations for advanced courses in the department, with special reference to the advanced probability sequence Statistics 6325, 6894. Topics will vary but will typically center on real analysis: sequences, series, limits and continuity of functions, differentiation, sequences and series of functions. As time permits, other topics such as metric spaces and vector spaces will be treated.

Statistics 5585-5685. Mathematical Statistics.

Prerequisite: 3 semesters of calculus, the third possibly concurrent.

Distribution and density functions of random variables , conditional probability and independence, moment generating functions and moments, common families of distributions, multi-parameter exponential family, multiple random variables, change-of-variable techniques, models of convergence, central limit theorem, distribution of order statistics, sufficiency principle, minimal sufficiency, ancillarity, completeness, likelihood principle, point estimation, interval estimation, hypothesis testing, evaluation of estimators and tests.

Statistics 5505-5605. Applied Statistics

Prerequisites: A previous statistical methods course, calculus, and/or consent of instructor.

Statistics from a data analytic viewpoint incorporating parametric and nonparametric methods, exploratory data analysis, graphical methods, one-sample problems, jackknifing, bootstrapping, robustness, two-sample problems, k-sample problems including one-way ANOVA, randomized block designs, two-way ANOVA, additivity, simple linear regression, multiple linear regression, analysis of covariance, categorical data.

Statistics 6315. Inference I

Prerequisite: Statistics 5685.

Exponential families, sufficient statistics, loss, decision rules and risk, convexity, prior information, unbiasedness (including multi-parameter case), Bayesian analysis, minimax analysis, minimaxity and admissibility in exponential families, simultaneous estimation and shrinkage estimators, efficient likelihood estimations, equivariant estimation.

Statistics 6515. Inference II

Prerequisite: Statistics 6315 and consent of instructor.

Real analysis for inference, statistics and subfields, conditional expectations and probability distributions, UMP tests with applications to normal distributions and confidence sets, invariance, asymptotic theory of estimation and likelihood based inference.

Statistics 5725. Linear Models I

Prerequisites: Statistics 5685 or 3445, linear algebra, consent of instructor.

Introduction to matrices with applications in statistics, multivariate distribution theory, distribution of quadratic forms, theory for the full rank and less than full rank model (including geometric developments), analysis of covariance, comparison of regression and dummy variable modeling.

Statistics 6325-6894. Probability Theory

Prerequisite: Statistics 5015 and consent of instructor.

Concepts from abstract analysis, Lebesgue measure, abstract measures, extension of measures, Lebesgue-Stieltjes measures, measurable functions and integration. Radon-Nikodym Theorem, product measures and Fubini's Theorem, measures on infinite product spaces, basic concepts of probability theory, conditional probability and expectation, regular conditional probability, strong law of large numbers, martingale theory, martingale convergence theorems, uniform integrability, optional sampling theorems, Kolmogorov's Three series Theorem, weak convergence of distribution functions, the fundamental weak compactness theorems, convergence to a normal distribution, Lindeberg's Theorem.

Statistics 5525. Sampling Theory

Prerequisite: Statistics 5685 or 3445.

Concepts of sampling error, non-sampling error, bias, sampling designs, simple random sampling with replacement, simple random sampling without replacement, sampling with unequal probabilities stratified sampling, optimum allocation, proportional allocation, ratio estimators, regression estimators, systematic sampling, super population approaches, inference in finite sampling.

Statistics 5361. Statistical Computing

Prerequisite: Statistics 3025Q, 3445 or 5685 and/or consent of instructor.

An introduction to computing for statistical problems and research. Topics covered are basic numerical methods, nonlinear statistical methods, numerical integration and differentiation, random generation, and simulation. Should time allow, statistical graphics is considered.

Statistics 5625. Introduction to Biostatistics

Rates and proportions, sensitivity, specificity, two-way tables, odds ratios, relative risk, ordered and non-ordered classifications, trends, case-control studies, elements of regression including logistic and Poisson, additivity and interaction, combination of studies and meta-analysis.

Statistics 5635. Clinical Trials

Basic concepts of clinical trial analysis: controls, randomization, blinding, surrogate endpoints, sample size calculations, sequential monitoring, side-effect evaluation and intention-to-treat analyses. Also, experimental designs including dose response study, multicenter trials, clinical trials for drug development, stratification, and cross-over trials.

Statistics 5645. Concepts and Analysis of Survival Data

Survival models, censoring and truncation, nonparametric estimation of survival functions, comparison of treatment groups, mathematical and graphical methods for assessing goodness of fit, parametric and nonparametric regression models.

Statistics 5825. Applied Time Series

Introduction to prediction using time-series regression methods with non-seasonal and seasonal data. Smoothing methods for forecasting. Modeling and forecasting using univariate autoregressive moving average models.

Statistics 5665. Applied Multivariate Analysis

Prerequisite: Matrix algebra, a prior statistical methods course, Statistics 3375Q or 5585 or consent of instructor.

Multinormal techniques with applications, topics covered: Hotelling's T^2 test, multivariate analysis of variance, discriminant analysis, principal components, factor analysis, cluster analysis, introduction to and use of SAS computer package.

Statistics 6694. Linear Models II

Prerequisite: Statistics 5725.

Further topics in regression (including robust, ridge & reverse regression). Models not of full rank (including design models). Multi-way crossed classification, variance components, simultaneous inference, analysis of covariance, cross validation, regression diagnostics, generalized linear models.

In addition, special topics courses are offered in areas such as: bioinformatics, categorical data analysis, time series methods, generalized linear models, Bayesian data analysis, spatial and longitudinal data modeling, sequential analysis, stochastic geometry, survival analysis, approximations and inequalities, nonparametric methods, and advanced topics in inference.

COURSE SUMMARY FORM

Return To: Director of Graduate Studies
Department of Statistics
215 Glenbrook Road, U-4120
University of Connecticut
Storrs, CT U.S.A. 06269-4120

NAME_____

Provide the following information for all mathematics and statistics courses that you have completed or are scheduled to complete before your intended starting date at The University of Connecticut. (Use reverse side if additional space is required.)

UNDERGRADUATE COURSES	SEM.HRS.	FINAL GRADE	TEXTBOOK AUTHOR

GRADUATE COURSES	SEM.HRS.	FINAL GRADE	TEXTBOOK AUTHOR

COMPUTER BACKGROUND: If you have computer background, a brief statement of the extent of this experience should be given

THE UNIVERSITY OF CONNECTICUT
DEPARTMENT OF STATISTICS

IMPORTANT: An application will not be acted upon until all of the following items have been received.

To the Graduate School:

1. Completed Application for Graduate Admission and Residence Affidavit.

2. One set of official transcripts and certification that the degree has been awarded.

3. TOEFL (or IELTS) and GRE Aptitude Examinations taken within five years from the date of application. These are essential before your application can be considered. A minimum score of 550 for the paper-based TOEFL, 213 for the computer-based TOEFL or 80 for the internet-based TOEFL. A minimum score of 6.5 of IELTS may be used to substitute for TOEFL. With regard to the GRE scores, we consider applicants with a verbal score above median and a quantitative score ranked in the top twenty five percent for financial support.

4. Completed Course Summary Form (P. 22)

5. Three or four letters of recommendation, at least one of which should be from someone associated with your most recent academic program. (Letters need not be on special forms.)

6. A letter describing your career goals.

7. Scores on verbal, quantitative, and analytic sections of the Graduate Record Examination are helpful and are required for consideration for financial aid.

8. For students not born in the United States, passing the phone pass test of the English language is required to be considered for financial aid. After admission to the graduate program with a status of financial aid pending, please contact Tracy Burke via e-mail at Tracy.Burke@uconn.edu to receive instructions on how to arrange for taking this test.

   Early attention to each of the above items will speed the consideration of your application.While the fall application deadline is June 1 (April 1 for international applicants), financial aid decisions are usually made in March. A completed application by February 1 is required for consideration of financial aid.

The Director of Graduate Studies will be glad to provide additional information. Moreover, applicants are invited and encouraged to visit the Department for a personal interview, if possible.