STAT - STATISTICS

STAT Class Schedule (https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/STAT/)

Courses

STAT 100 Statistics credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/STAT/100/)
First course in probability and statistics at a precalculus level; emphasizes basic concepts, including descriptive statistics, elementary probability, estimation, and hypothesis testing in both nonparametric and normal models. Credit is not given for both STAT 100 and any one of the following: ECON 202, PSYC 235, or SOC 485. Prerequisite: MATH 112.
This course satisfies the General Education Criteria for:
Quantitative Reasoning I

STAT 107 Data Science Discovery credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/107/)
Data Science Discovery is the intersection of statistics, computation, and real-world relevance. As a project-driven course, students perform hands-on-analysis of real-world datasets to analyze and discover the impact of the data. Throughout each experience, students reflect on the social issues surrounding data analysis such as privacy and design. Same as CS 107 and IS 107.
This course satisfies the General Education Criteria for:
Quantitative Reasoning I

STAT 199 Undergraduate Open Seminar credit: 1 to 5 Hours. (https://courses.illinois.edu/schedule/terms/STAT/199/)
See course schedule for topics. Approved for Letter and S/U grading. May be repeated if topics vary.

STAT 200 Statistical Analysis credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/STAT/200/)
Survey of statistical concepts, data analysis, designed and observational studies and statistical models. Statistical computing using a statistical package such as R or a spreadsheet. Topics to be covered include data summary and visualization, study design, elementary probability, categorical data, comparative experiments, multiple linear regression, analysis of variance, statistical inferences and model diagnostics. May be taken as a first statistics course for quantitatively oriented students, or as a second course to follow a basic concepts course. Credit is not given for both STAT 200 and STAT 212.
This course satisfies the General Education Criteria for:
Quantitative Reasoning I

STAT 207 Data Science Exploration credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/207/)
Explores the data science pipeline from hypothesis formulation, to data collection and management, to analysis and reporting. Topics include data collection, preprocessing and checking for missing data, data summary and visualization, random sampling and probability models, estimating parameters, uncertainty quantification, hypothesis testing, multiple linear and logistic regression modeling, classification, and machine learning approaches for high dimensional data analysis. Students will learn how to implement the methods using Python programming and Git version control. Prerequisite: STAT 107 or consent of instructor.
This course satisfies the General Education Criteria for:
Quantitative Reasoning II

STAT 212 Biostatistics credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/STAT/212/)
Application of statistical reasoning and statistical methodology to biology. Topics include descriptive statistics, graphical methods, experimental design, probability, statistical inference and regression. In addition, techniques of statistical computing are covered. Credit is not given for both STAT 212 and STAT 200.
This course satisfies the General Education Criteria for:
Quantitative Reasoning I

STAT 361 Probability & Statistics for Computer Science credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/STAT/361/)
Same as CS 361. See CS 361.

STAT 385 Statistics Programming Methods credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/STAT/385/)
Statisticians must be savvy in programming methods useful to the wide variety of analysis that they will be expected to perform. This course provides the foundation for writing and packaging statistical algorithms through the creation of functions and object oriented programming. Fundamental programming techniques and considerations will be emphasized. Students will also create dynamic reports that encapsulate their implemented algorithms. Students must have access to a computer on which they can install software. Prerequisite: One of STAT 107, STAT 200, or STAT 212.

STAT 390 Individual Study credit: 1 or 2 Hours. (https://courses.illinois.edu/schedule/terms/STAT/390/)
May be repeated to a maximum of 8 hours. Prerequisite: Consent of instructor.

STAT 391 Honors Individual Study credit: 1 or 2 Hours. (https://courses.illinois.edu/schedule/terms/STAT/391/)
May be repeated to a maximum of 8 hours. Prerequisite: Consent of instructor.

STAT 400 Statistics and Probability I credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/400/)
Introduction to mathematical statistics that develops probability as needed; includes the calculus of probability, random variables, expectation, distribution functions, central limit theorem, point estimation, confidence intervals, and hypothesis testing. Offers a basic one-term introduction to statistics and also prepares students for STAT 410 and STAT 425. Same as MATH 463. 4 undergraduate hours. 4 graduate hours. Prerequisite: MATH 231. Concurrent Enrollment in MATH 241 is required. Not intended for first-time freshmen.

STAT 408 Actuarial Statistics I credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/408/)
Examines elementary theory of probability, including independence, conditional probability, and Bayes' theorem; combinations and permutations; random variables, expectations, and probability distributions; joint and conditional distributions; functions of random variables; sampling; central limit theorem. Same as ASRM 401. 4 undergraduate hours. 4 graduate hours. Credit is not given for both STAT 408 and either MATH 461 or STAT 400. Prerequisite: MATH 241 or equivalent.

STAT 409 Actuarial Statistics II credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/409/)
Continuation of STAT 408. Examines parametric point and interval estimation, including maximum likelihood estimation, sufficiency, completeness, and Bayesian estimation; hypothesis testing; linear models; regression and correlation. Same as ASRM 402. 4 undergraduate hours. 4 graduate hours. Credit is not given for both STAT 409 and STAT 410. Prerequisite: STAT 408.

STAT 410 Statistics and Probability II credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/410/)
Continuation of STAT 400. Includes moment-generating functions, transformations of random variables, normal sampling theory, sufficiency, best estimators, maximum likelihood estimators, confidence intervals, most powerful tests, unbiased tests, and chi-square tests. Same as MATH 464. 3 undergraduate hours. 4 graduate hours. Credit is not given for both STAT 410 and STAT 409. Prerequisite: MATH 241 and STAT 400.

STAT 420 Methods of Applied Statistics credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/420/)
Systematic, calculus-based coverage of the more widely used methods of applied statistics, including simple and multiple regression, correlation, analysis of variance and covariance, multiple comparisons, goodness of fit tests, contingency tables, nonparametric procedures, and power of tests; emphasizes when and why various tests are appropriate and how they are used. Same as ASRM 450. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 408 or STAT 400; MATH 231 or equivalent; knowledge of basic matrix manipulations; or consent of instructor.

STAT 424 Design of Experiments credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/424/)
Discussion of the principles of experimental design with applications in science, industry, and technology. In addition to standard experimental designs, such as block, factorial, and fractional factorial designs, more advanced methods are introduced, such as response surface and robust designs. Basic analysis of variance models and more sophisticated models such as random and mixed effects models are investigated theoretically and applied to the statistical analysis of these designs. Fundamental concepts of randomization, replication, and blocking are emphasized. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 420 or STAT 425, and completion of or concurrent enrollment in STAT 410.

STAT 425 Statistical Modeling I credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/425/)
This is the foundation for advanced statistical modeling with a focus on multiple strategies for analyzing data. The course explores linear regression, least squares estimates, F-tests, analysis of residuals, regression diagnostics, transformations, model building, generalized and weighted least squares, PCA, A/B testing, randomization tests, ANOVA, random effects, mixed effects, and longitudinal data. Statistical computing is an integral part of the course. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 400; MATH 257 or MATH 415. Concurrent Enrollment in STAT 410 is preferred.

STAT 426 Statistical Modeling II credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/426/)
This is a continuation in the study of advanced statistical modeling techniques with a focus on categorical data. The course explores logistic regression, generalized linear models, goodness-of-fit, link functions, count regression, log-linear models, probability models for contingency tables, and ordinal response models. Statistical computing is an integral part of the course. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 410; STAT 425.

STAT 427 Statistical Consulting credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/427/)
Students, working in groups under the supervision of the instructor, consult with faculty and graduate students through the Statistical Consulting Service; readings from literature on consulting. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 425 or consent of instructor.

STAT 428 Statistical Computing credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/428/)
Examines statistical packages, numerical analysis for linear and nonlinear models, graphics, and random number generation and Monte Carlo methods. Same as CSE 428. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 410 or equivalent; knowledge of a programming language.

STAT 429 Time Series Analysis credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/429/)
Studies theory and data analysis for time series; examines auto-regressive moving average model building and statistical techniques; and discusses spectral model building and statistical analysis using windowed periodograms and Fast Fourier Transformations. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 410.

STAT 430 Topics in Applied Statistics credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/430/)
Formulation and analysis of mathematical models for random phenomena; extensive involvement with the analysis of real data; and instruction in statistical and computing techniques as needed. 3 undergraduate hours. 4 graduate hours. May be repeated in the same or separate terms if topics vary. Prerequisite: STAT 410; STAT 425. Some topics may require additional prerequisites. Read the section text for each topic.

STAT 431 Applied Bayesian Analysis credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/431/)
Introduction to the concepts and methodology of Bayesian statistics, for students with fundamental knowledge of mathematical statistics. Topics include Bayes' rule, prior and posterior distributions, conjugacy, Bayesian point estimates and intervals, Bayesian hypothesis testing, noninformative priors, practical Markov chain Monte Carlo, hierarchical models and model graphs, and more advanced topics as time permits. Implementations in R and specialized simulation software. Same as ASRM 453. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 410 and knowledge of R.

STAT 432 Basics of Statistical Learning credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/432/)
Topics in supervised and unsupervised learning are covered, including logistic regression, support vector machines, classification trees and nonparametric regression. Model building and feature selection are discussed for these techniques, with a focus on regularization methods, such as lasso and ridge regression, as well as methods for model selection and assessment using cross validation. Cluster analysis and principal components analysis are introduced as examples of unsupervised learning. Same as ASRM 451. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 400, and either STAT 420 or STAT 425.

STAT 433 Stochastic Processes credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/433/)
A stochastic process is a random process that represents the evolution of some system over time. Topics may include discrete-time and continuous-time Markov chains, birth-and-death chains, branching chains, stationary distributions, random walks, Markov pure jump processes, birth-and-death processes, renewal processes, Poisson process, queues, second order processes, Brownian motion (Wiener process), and Ito's lemma. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 400 required, STAT 410 preferred, and MATH 225 (or equivalent knowledge of Linear Algebra) highly recommended.

STAT 434 Survival Analysis credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/434/)
Introduction to the analysis of time-to-event outcomes. Topics center around three main procedures: the Kaplan-Meier estimator, the log-rank test, and Cox regression. Emphasis on big-picture concepts, basic methodological understanding, and practical implementation in R. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 410, STAT 420, and knowledge of R at the level of STAT 420.

STAT 437 Unsupervised Learning credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/437/)
Unsupervised learning is a type of machine learning that deals with finding patterns in data without the use of labeled examples. Two major unsupervised learning techniques, clustering and dimensionality reduction, will be covered with a focus on methods, evaluation metrics, and interpretation of results. The methodologies enable discovery of and inference about hidden insights contained in high-dimensional unlabeled data. Applications on real and artificial datasets are emphasized using programming languages such as Python. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 410 and either MATH 415 or MATH 257.

STAT 440 Statistical Data Management credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/440/)
The critical elements of data storage, data cleaning, and data extractions that ultimately lead to data analysis are presented. Includes basic theory and methods of databases, auditing and querying databases, as well as data management and data preparation using standard large-scale statistical software. Students will gain competency in the skills required in storing, cleaning, and managing data, all of which are required prior to data analysis. Same as CSE 440. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 400 or STAT 409.

STAT 443 Professional Statistics credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/443/)
This project-based course emphasizes written, visual, and oral communication of statistical results and conclusions. An introduction to statistical consulting is also provided. Additional topics include introductions to statistical methodologies in industry and aspects of careers in statistics. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 420 or STAT 425 (completion preferred, but may be taken concurrently) or consent of instructor.

STAT 447 Data Science Programming Methods credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/447/)
The field of data science is revolutionizing science and industries. Work across many fields is becoming more data driven, affecting available jobs and required skills. Increasing amounts of data, along with novel ways of analyzing them, lead the economy as well as society and daily life to become more data-dependent. This course aims to provide the principal foundations to working with data at scale. We will cover shell programming, git version control, SQL basics, a lot of R, and some more advanced topics such as Docker and some C++. 3 undergraduate hours. 4 graduate hours.

STAT 448 Advanced Data Analysis credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/448/)
Several of the most widely used techniques of data analysis are discussed with an emphasis on statistical computing. Topics include linear regression, analysis of variance, generalized linear models, and analysis of categorical data. In addition, an introduction to data mining is provided considering classification, model building, decision trees, and cluster analysis. Same as CSE 448. 4 undergraduate hours. 4 graduate hours. Prerequisite: STAT 400 or STAT 409, and credit for or concurrent registration in STAT 410.

STAT 480 Big Data Analytics credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/480/)
Examines current topics and techniques for efficiently and effectively managing and analyzing large-scale data. The course focuses on applications of advanced statistical analysis in data science for massive data sets. Topics include current best practices and technologies for implementation such as parallel and distributed processing, distributed storage techniques, and modern computational frameworks such as cloud computing. 3 undergraduate hours. 4 graduate hours. Prerequisite: (STAT 440 or STAT 447) and (STAT 420 or STAT 425); or permission of the instructor.

STAT 510 Mathematical Statistics credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/510/)
Provides a graduate level foundation in fundamental mathematical statistics topics including order statistics, exponential families, sufficiency, Rao-Blackwell theorem, Cramer-Rao lower bound, point estimation, hypothesis testing and interval estimation, likelihood and Bayesian methods, and large-sample asymptotics. 4 graduate hours. No professional credit. Prerequisite: STAT 410.

STAT 511 Advanced Mathematical Statistics credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/511/)
Provides an advanced introduction to rigorous mathematical foundations of statistical inference, covering topics such as distribution theory, point estimation theory, interval estimation, theory of hypothesis testing, and decision theory. 4 graduate hours. No professional credit. Prerequisite: Familiarity with probability theory and statistics at the level of STAT 410. For Graduate Students Only.

STAT 525 Topics in Computational Statistics credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/525/)
Various topics in computational statistics, such as optimization, Monte Carlo methods, Bayesian computation, and machine learning. Same as CSE 525. 4 graduate hours. No professional credit. May be repeated if topics vary. Prerequisite: STAT 425, STAT 426, and STAT 510 or 511; or consent of instructor.

STAT 527 Advanced Regression Analysis credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/527/)
An advanced introduction to regression analysis with applications to analysing data from disciplines such as biostatistics and economics. The course will introduce classical as well as modern regression methods and goes into the depths of those techniques to understand the motivation, justification, implementation of those methods. An emphasis will be given to understand the statistical properties of those methods along with their practical advantages and limitations. Both theoretical and applied aspects of regression analysis will be discussed. 4 graduate hours. No professional credit. Prerequisite: STAT 410, STAT 510 or STAT 511 (concurrent enrollment is sufficient), and knowledge of R. For Graduate Students Only.

STAT 528 Advanced Regression Analysis II credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/528/)
An advanced (graduate-level) introduction to generalized linear models and categorical data analysis with applications to analyzing data from disciplines such as biostatistics, economics, evolutionary biology, and medicine. The course will introduce classical techniques as well as modern methods. A strong emphasis will be placed on statistical properties of presented methods as well as data analysis practice and critical statistical thinking. Practical advantages, limitations, and comparisons of methods will be discussed. 4 graduate hours. No professional credit. Prerequisite: STAT 510 or STAT 511, STAT 527. Restricted to graduate students only.

STAT 530 Bioinformatics credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/530/)
Same as ANSC 543, CHBE 571, and MCB 571. See CHBE 571.

STAT 533 Advanced Stochastic Processes credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/533/)
A nonmeasure theoretic introduction of stochastic processes. Students with suitable background in probability theory, real analysis and linear algebra are welcome to attend. Some classical topics will be included, such as discrete time Markov chains, continuous time Markov chains, Martingales, Renewal processes and Brownian motion. Students will learn some basic theory of stochastic processes, and their applications in several areas, including Queueing theory, Risk theory and Statistics. Students will also learn some probabilistic intuition and insights in thinking about problems, and some basic tools in the theoretical investigation of stochastic phenomenon and models. 4 graduate hours. No professional credit. Prerequisite: MATH 540, MATH 415 and MATH 461.

STAT 534 Advanced Survival Analysis credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/534/)
Introduction to the analysis of time-to-event outcomes. Topics include censoring, discrete survival, parametric models, nonparametric one- and K-sample methods, Cox regression, regression diagnostics, time-dependent covariates, and multivariate survival outcomes. Emphasis on key underlying concepts. Counting process-based theoretical justification and practical implementation will also be discussed. 4 graduate hours. No professional credit. Prerequisite: STAT 410, STAT 425, and knowledge of R.

STAT 541 Advanced Predictive Analytics credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/541/)
Same as ASRM 555. See ASRM 555.

STAT 542 Statistical Learning credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/542/)
Modern techniques of predictive modeling, classification, and clustering are discussed. Examples of these are linear regression, nonparametric regression, kernel methods, regularization, cluster analysis, classification trees, neural networks, boosting, discrimination, support vector machines, and model selection. Applications are discussed as well as computation and theory. Same as ASRM 551 and CSE 542. 4 graduate hours. No professional credit. Prerequisite: STAT 410 and STAT 425.

STAT 543 Appl. Multivariate Statistics credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/543/)
Same as CPSC 543. See CPSC 543.

STAT 545 Spatial Statistics credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/545/)
Theory and methods for analyzing univariate and multivariate spatial and spatio-temporal data. Covers both fundamental theories and cutting-edge research advances for geostatistics, and statistical methods for aggregated data and point processes. Real data examples will be provided in class and statistical software will be used to illustrate the data analysis. 4 graduate hours. No professional credit. Prerequisite: STAT 425 or equivalent.

STAT 546 Machine Learning in Data Science credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/546/)
Trains students to analyze large complex data using advanced statistical learning methods and algorithms. The main topics in the course include: data exploration and interpretation in data science; large data processing; regularization methods; optimization tools; deep learning; recommender systems; network and graphical models; text mining; and imaging analyses. Students will gain practical skills of data mining and knowledge discovery in various applications such as business, political science, biology and medicine. 4 graduate hours. No professional credit. Prerequisite: STAT 425; STAT 510 or STAT 511.

STAT 551 Theory of Probability I credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/551/)
Same as MATH 561. See MATH 561.

STAT 552 Theory of Probability II credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/552/)
Same as MATH 562. See MATH 562.

STAT 553 Probability and Measure I credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/553/)
Measures and probabilities; integration and expectation; convergence theorems and inequalities for integrals and expectations; independence; convergence in probability, almost surely, and mean; Three Series Theorem; laws of large numbers. Prerequisite: MATH 447 or consent of instructor.

STAT 554 Probability and Measure II credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/554/)
Measure extensions, Lebesque-Stieltjes measure, Kolmogorov consistency theorem; conditional expectation, conditional probability, martingales; distribution functions and characteristic functions; convergence in distribution; Central Limit Theorem; Brownian Motion. Credit is not given for both STAT 554 and either MATH 561 or MATH 562.

STAT 555 Applied Stochastic Processes credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/555/)
Same as MATH 564. See MATH 564.

STAT 556 Advanced Time Series Analysis credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/556/)
This is a graduate-level course on time series analysis, with an emphasis on nonlinear and multivariate time series. Topics include: linear time series, nonlinear time series, continuous-time models, multivariate and high-dimensional models. Students will learn how to build adequate models, perform statistical estimation and inference, conduct prediction, and related topics. Students will also learn some basic mathematical tools (such as Markov chains, martingales, stochastic calculus, concentration inequalities, etc.) for theoretically analyzing large-sample properties of general nonlinear random processes. 4 graduate hours. No professional credit. Prerequisite: STAT 429 or equivalent.

STAT 558 Risk Modeling and Analysis credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/558/)
Same as MATH 563. See MATH 563.

STAT 571 Multivariate Analysis credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/571/)
Inference in multivariate statistical populations emphasizing the multivariate normal distribution; derivation of tests, estimates, and sampling distributions; and examples from the natural and social sciences. Prerequisite: STAT 410 and MATH 415, or consent of instructor.

STAT 575 Large Sample Theory credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/575/)
Limiting distribution of maximum likelihood estimators, likelihood ratio test statistics, U-statistics, M-, L-, and R-estimators, nonparametric test statistics, Von Mises differentiable statistical functions; asymptotic relative efficiencies; asymptotic expansions. Same as ECON 578. Prerequisite: STAT 511 and either MATH 561 or STAT 554.

STAT 576 Empirical Process Theory and Weak Convergence credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/576/)
A graduate-level introduction to Empirical Process Theory with applications to statistical M estimation, nonparametric regression, and high dimensional statistics. Empirical Process Theory deals with two fundamental questions: the uniform law of large numbers, and the uniform central limit theorems, both of which will be covered. This course provides rigorous training in empirical process for students with a strong background in mathematical statistics. Topics covered are useful for conducting modern theoretical research in statistics and probability. 4 graduate hours. No professional credit. Prerequisite: STAT 511, STAT 575, STAT 553. Restricted to graduate students only.

STAT 578 Topics in Statistics credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/578/)
May be repeated if topics vary. Prerequisite: Consent of instructor.

STAT 587 Hierarchical Linear Models credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/587/)
Same as PSYC 587 and EPSY 587. See EPSY 587.

STAT 588 Covar Struct and Factor Models credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/STAT/588/)
Same as EPSY 588, PSYC 588, and SOC 588. See PSYC 588.

STAT 590 Individual Study and Research credit: 0 to 8 Hours. (https://courses.illinois.edu/schedule/terms/STAT/590/)
Directed reading and research. Approved for letter and S/U grading. May be repeated with approval. Prerequisite: Consent of instructor.

STAT 593 STAT Internship credit: 0 to 8 Hours. (https://courses.illinois.edu/schedule/terms/STAT/593/)
Supervised, off-campus experience in a field in which statistical science plays an important role. Approved for letter and S/U grading. Prerequisite: STAT 425 and consent of instructor.

STAT 595 Preparing Future Faculty credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/STAT/595/)
Prepares Ph.D. students who are interested in an academic career to develop a successful academic career path, and to prepare graduate students for their future roles as teachers, and researchers. The course will focus on profession, job search, research, teaching and service. The course will involve guest panels, small and large group presentations and interactive Q&A with student participation.

STAT 599 Thesis Research credit: 0 to 16 Hours. (https://courses.illinois.edu/schedule/terms/STAT/599/)
Approved for S/U grading only. May be repeated. Prerequisite: Consent of instructor.