Statistics (STAT)

Courses

Expand all course descriptions [+]Collapse all course descriptions [-]

STAT 0PX Preparatory Statistics 1 Unit

Terms offered: Summer 2016 10 Week Session, Summer 2015 10 Week Session, Summer 2014 10 Week Session
This course assists entering Freshman students with basic statistical concepts and problem solving. Designed for students who do not meet the prerequisites for 2. Offered through the Student Learning Center.
Preparatory Statistics: Read More [+]

Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Summer:
6 weeks - 5 hours of lecture and 4.5 hours of workshop per week
8 weeks - 5 hours of lecture and 4.5 hours of workshop per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam required.

Instructor: Purves

Preparatory Statistics: Read Less [-]

STAT 2 Introduction to Statistics 4 Units

Terms offered: Fall 2024, Summer 2024 8 Week Session, Spring 2024
Population and variables. Standard measures of location, spread and association. Normal approximation. Regression. Probability and sampling. Interval estimation. Some standard significance tests.
Introduction to Statistics: Read More [+]

Rules & Requirements

Credit Restrictions: Students will receive no credit for STAT 2 after completing STAT W21, STAT 20, STAT 21, STAT 25, STAT S2, STAT 21X, STAT N21, STAT 5, or STAT 2X.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Summer:
6 weeks - 7.5 hours of lecture and 5 hours of laboratory per week
8 weeks - 5 hours of lecture and 4 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Introduction to Statistics: Read Less [-]

STAT C8 Foundations of Data Science 4 Units

Terms offered: Fall 2024, Summer 2024 8 Week Session, Spring 2024, Fall 2023, Spring 2023, Fall 2022, Spring 2022, Fall 2021, Summer 2021 8 Week Session, Fall 2020
Foundations of data science from three perspectives: inferential thinking, computational thinking, and real-world relevance. Given data arising from some real-world phenomenon, how does one analyze that data so as to understand that phenomenon? The course teaches critical concepts and skills in computer programming and statistical inference, in conjunction with hands-on analysis of real-world datasets, including economic data, document collections, geographical data, and social networks. It delves into social and legal issues surrounding data analysis, including issues of privacy and data ownership.
Foundations of Data Science: Read More [+]

Rules & Requirements

Prerequisites: This course may be taken on its own, but students are encouraged to take it concurrently with a data science connector course (numbered 88 in a range of departments)

Credit Restrictions: Students will receive no credit for DATA C8\COMPSCI C8\INFO C8\STAT C8 after completing COMPSCI 8, or DATA 8. A deficient grade in DATA C8\COMPSCI C8\INFO C8\STAT C8 may be removed by taking COMPSCI 8, COMPSCI 8, or DATA 8.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Summer: 8 weeks - 6 hours of lecture and 4 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: Computer Science C8/Statistics C8/Information C8

Also listed as: COMPSCI C8/DATA C8/INFO C8

Foundations of Data Science: Read Less [-]

STAT 20 Introduction to Probability and Statistics 4 Units

Terms offered: Fall 2024, Summer 2024 8 Week Session, Spring 2024
For students with mathematical background who wish to acquire basic concepts. Relative frequencies, discrete probability, random variables, expectation. Testing hypotheses. Estimation. Illustrations from various fields.
Introduction to Probability and Statistics: Read More [+]
Rules & Requirements

Prerequisites: Mathematics 1A, Mathematics 16A, Mathematics 10A/10B, or consent of instructor

Credit Restrictions: Students will receive no credit for STAT 20 after completing STAT W21, STAT 2, STAT 5, STAT 21, STAT N21, STAT 2X, STAT S20, STAT 21X, or STAT 25. A deficient grade in STAT 20 may be removed by taking STAT W21, STAT 21, or STAT N21.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Summer: 8 weeks - 6 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Introduction to Probability and Statistics: Read Less [-]

STAT 21 Introductory Probability and Statistics for Business 4 Units

Terms offered: Summer 2024 8 Week Session, Summer 2023 8 Week Session, Summer 2022 8 Week Session
Descriptive statistics, probability models and related concepts, sample surveys, estimates, confidence intervals, tests of significance, controlled experiments vs. observational studies, correlation and regression.
Introductory Probability and Statistics for Business: Read More [+]
Rules & Requirements

Prerequisites: One semester of calculus

Credit Restrictions: Students will receive no credit for STAT 21 after completing STAT 20, STAT W21, STAT 25, STAT 2X, STAT 21X, STAT S21, STAT 5, STAT 2, or STAT N21. A deficient grade in STAT 21 may be removed by taking STAT 20, STAT W21, or STAT N21.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Summer: 8 weeks - 7.5 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Introductory Probability and Statistics for Business: Read Less [-]

STAT W21 Introductory Probability and Statistics for Business 4 Units

Terms offered: Summer 2021 8 Week Session, Summer 2020 8 Week Session, Summer 2019 8 Week Session
Reasoning and fallacies, descriptive statistics, probability models and related concepts, combinatorics, sample surveys, estimates, confidence intervals, tests of significance, controlled experiments vs. observational studies, correlation and regression.
Introductory Probability and Statistics for Business: Read More [+]
Rules & Requirements

Prerequisites: One semester of calculus

Credit Restrictions: Students will receive no credit for Statistics W21 after completing Statistics 2, 20, 21, N21 or 25. A deficient grade in Statistics 21, N21 maybe removed by taking Statistics W21.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of web-based lecture per week

Summer: 8 weeks - 7.5 hours of web-based lecture per week

Online: This is an online course.

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: N21

Introductory Probability and Statistics for Business: Read Less [-]

STAT 24 Freshman Seminars 1 Unit

Terms offered: Spring 2021, Fall 2016, Fall 2003
The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen.
Freshman Seminars: Read More [+]
Rules & Requirements

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of seminar per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: The grading option will be decided by the instructor when the class is offered. Final exam required.

Freshman Seminars: Read Less [-]

STAT 33A Introduction to Programming in R 1 Unit

Terms offered: Spring 2024, Fall 2023, Spring 2023
An introduction to the R statistical software for students with minimal prior experience with programming. This course prepares students for data analysis with R. The focus is on the computational model that underlies the R language with the goal of providing a foundation for coding. Topics include data types and structures, such as vectors, data frames and lists; the REPL evaluation model; function calls, argument matching, and environments; writing simple functions and control flow. Tools for reading, analyzing, and plotting data are covered, such as data input/output, reshaping data, the formula language, and graphics models.
Introduction to Programming in R: Read More [+]

Rules & Requirements

Credit Restrictions: Students will receive no credit for STAT 33A after completing STAT 33B, or STAT 133. A deficient grade in STAT 33A may be removed by taking STAT 33B, or STAT 133.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of lecture and 1 hour of laboratory per week

Summer: 6 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Introduction to Programming in R: Read Less [-]

STAT 33B Introduction to Advanced Programming in R 1 Unit

Terms offered: Spring 2024, Fall 2023, Spring 2023
The course is designed primarily for those who are already familiar with programming in another language, such as python, and want to understand how R works, and for those who already know the basics of R programming and want to gain a more in-depth understanding of the language in order to improve their coding. The focus is on the underlying paradigms in R, such as functional programming, atomic vectors, complex data structures, environments, and object systems. The goal of this course is to better understand programming principles in general and to write better R code that capitalizes on the language's design.
Introduction to Advanced Programming in R: Read More [+]

Rules & Requirements

Prerequisites: Compsci 61A or equivalent programming background

Credit Restrictions: Students will receive no credit for STAT 33B after completing STAT 133. A deficient grade in STAT 33B may be removed by taking STAT 133.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of lecture and 1 hour of laboratory per week

Summer: 6 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Introduction to Advanced Programming in R: Read Less [-]

STAT 39D Freshman/Sophomore Seminar 2 - 4 Units

Terms offered: Fall 2008, Fall 2007
Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.
Freshman/Sophomore Seminar: Read More [+]

Rules & Requirements

Prerequisites: Priority given to freshmen and sophomores

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 2-4 hours of seminar per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: The grading option will be decided by the instructor when the class is offered. Final exam required.

Freshman/Sophomore Seminar: Read Less [-]

STAT C79 Societal Risks and the Law 3 Units

Terms offered: Spring 2013
Defining, perceiving, quantifying and measuring risk; identifying risks and estimating their importance; determining whether laws and regulations can protect us from these risks; examining how well existing laws work and how they could be improved; evaluting costs and benefits. Applications may vary by term. This course cannot be used to complete engineering unit or technical elective requirements for students in the College of Engineering.
Societal Risks and the Law: Read More [+]

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Also listed as: COMPSCI C79/POL SCI C79

Societal Risks and the Law: Read Less [-]

STAT C88S Probability and Mathematical Statistics in Data Science 3 Units

Terms offered: Spring 2024, Summer 2023 8 Week Session, Spring 2023, Fall 2022
In this connector course we will state precisely and prove results discovered while exploring data in Data C8. Topics include: probability, conditioning, and independence; random variables; distributions and joint distributions; expectation, variance, tail bounds; Central Limit Theorem; symmetries in random permutations; prior and posterior distributions; probabilistic models; bias-variance tradeoff; testing hypotheses; correlation and the regression model.
Probability and Mathematical Statistics in Data Science: Read More [+]

Rules & Requirements

Prerequisites: Prerequisite: one semester of calculus at the level of Math 16A, Math 10A, or Math 1A. Corequisite or Prerequisite: Foundations of Data Science (COMPSCI C8 / DATA C8 / INFO C8 / STAT C8)

Credit Restrictions: Students will receive no credit for DATA C88S after completing STAT 134, STAT 140, STAT 135, or DATA C102.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of discussion per week

Summer: 8 weeks - 6 hours of lecture and 4 hours of discussion per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: Statistics 88

Also listed as: DATA C88S

Probability and Mathematical Statistics in Data Science: Read Less [-]

STAT 89A Linear Algebra for Data Science 4 Units

Terms offered: Spring 2022, Spring 2021, Spring 2020
An introduction to linear algebra for data science. The course will cover introductory topics in linear algebra, starting with the basics; discrete probability and how prob- ability can be used to understand high-dimensional vector spaces; matrices and graphs as popular mathematical structures with which to model data (e.g., as models for term-document corpora, high-dimensional regression problems, ranking/classification of web data, adjacency properties of social network data, etc.); and geometric approaches to eigendecompositions, least-squares, principal components analysis, etc.
Linear Algebra for Data Science: Read More [+]

Rules & Requirements

Prerequisites: One year of calculus. Prerequisite or corequisite: Foundations of Data Science (COMPSCI C8 / INFO C8 / STAT C8)

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Linear Algebra for Data Science: Read Less [-]

STAT 94 Special Topics in Probability and Statistics 1 - 4 Units

Terms offered: Fall 2015
Topics will vary semester to semester.
Special Topics in Probability and Statistics: Read More [+]

Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1-3 hours of lecture and 0-2 hours of discussion per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Special Topics in Probability and Statistics: Read Less [-]

STAT 97 Field Study in Statistics 1 - 3 Units

Terms offered: Fall 2015, Spring 2012
Supervised experience relevant to specific aspects of statistics in off-campus settings. Individual and/or group meetings with faculty.
Field Study in Statistics: Read More [+]

Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 1-3 hours of fieldwork per week

Summer:
6 weeks - 2.5-7.5 hours of fieldwork per week
8 weeks - 1.5-5.5 hours of fieldwork per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

Field Study in Statistics: Read Less [-]

STAT 98 Directed Group Study 1 - 3 Units

Terms offered: Fall 2023, Spring 2023, Fall 2022
Must be taken at the same time as either Statistics 2 or 21. This course assists lower division statistics students with structured problem solving, interpretation and making conclusions.
Directed Group Study: Read More [+]

Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 2-3 hours of directed group study per week

Summer: 8 weeks - 4-6 hours of directed group study per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

Directed Group Study: Read Less [-]

STAT C100 Principles & Techniques of Data Science 4 Units

Terms offered: Fall 2024, Summer 2024 8 Week Session, Spring 2024, Summer 2023 8 Week Session, Fall 2022, Fall 2021, Fall 2020
In this course, students will explore the data science lifecycle, including question formulation, data collection and cleaning, exploratory data analysis and visualization, statistical inference and prediction, and decision-making. This class will focus on quantitative critical thinking and key principles and techniques needed to carry out this cycle. These include languages for transforming, querying and analyzing data; algorithms for machine learning methods including regression, classification and clustering; principles behind creating informative data visualizations; statistical concepts of measurement error and prediction; and techniques for scalable data processing.
Principles & Techniques of Data Science: Read More [+]

Rules & Requirements

Prerequisites: COMPSCI C8 / DATA C8 / INFO C8 / STAT C8 with a C- or better, or Pass; and COMPSCI 61A, COMPSCI/DATA C88C, or ENGIN 7 with a C- or better, or Pass; Corequisite: MATH 54, 56 or EECS 16A (C- or better, or Pass, required if completed prior to Data C100)

Credit Restrictions: Students will receive no credit for DATA C100\STAT C100\COMPSCI C100 after completing DATA 100. A deficient grade in DATA C100\STAT C100\COMPSCI C100 may be removed by taking DATA 100.

Hours & Format

Fall and/or spring: 15 weeks - 3-3 hours of lecture, 1-1 hours of discussion, and 0-1 hours of laboratory per week

Summer: 8 weeks - 6-6 hours of lecture, 2-2 hours of discussion, and 0-2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Gonzalez, Nourozi, Perez, Yan

Formerly known as: Statistics C100/Computer Science C100

Also listed as: COMPSCI C100/DATA C100

Principles & Techniques of Data Science: Read Less [-]

STAT C102 Data, Inference, and Decisions 4 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
This course develops the probabilistic foundations of inference in data science, and builds a comprehensive view of the modeling and decision-making life cycle in data science including its human, social, and ethical implications. Topics include: frequentist and Bayesian decision-making, permutation testing, false discovery rate, probabilistic interpretations of models, Bayesian hierarchical models, basics of experimental design, confidence intervals, causal inference, Thompson sampling, optimal control, Q-learning, differential privacy, clustering algorithms, recommendation systems and an introduction to machine learning tools including decision trees, neural networks and ensemble methods.
Data, Inference, and Decisions: Read More [+]

Rules & Requirements

Prerequisites: Math 54 or 56 or 110 or Stat 89A or Physics 89 or both of EECS 16A and 16B with a C- or better, or Pass; Data/Stat/CompSci C100 with a C- or better, or Pass; and any of EECS 126, Data/Stat C140, Stat 134, IndEng 172, Math 106 with a C- or better, or Pass. Data/Stat C140 or EECS 126 are preferred

Credit Restrictions: Students will receive no credit for DATA C102 after completing STAT 102, or DATA 102. A deficient grade in DATA C102 may be removed by taking STAT 102, STAT 102, or DATA 102.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture, 1 hour of discussion, and 1 hour of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: Statistics 102

Also listed as: DATA C102

Data, Inference, and Decisions: Read Less [-]

STAT C131A Statistical Methods for Data Science 4 Units

Terms offered: Fall 2024, Fall 2023, Spring 2023
This course teaches a broad range of statistical methods that are used to solve data problems. Topics include group comparisons and ANOVA, standard parametric statistical models, multivariate data visualization, multiple linear regression, logistic regression and classification, regression trees and random forests. An important focus of the course is on statistical computing and reproducible statistical analysis. The course and lab include hands-on experience in analyzing real world data from the social, life, and physical sciences. The R statistical language is used.
Statistical Methods for Data Science: Read More [+]

Rules & Requirements

Prerequisites: Statistics/Computer Science/Information C8 or Statistics 20; and Mathematics 1A, Mathematics 16A, or Mathematics 10A/10B. Strongly recommended corequisite: Statistics 33A or Statistics 133

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: Statistics 131A

Also listed as: DATA C131A

Statistical Methods for Data Science: Read Less [-]

STAT 133 Concepts in Computing with Data 3 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
An introduction to computationally intensive applied statistics. Topics will include organization and use of databases, visualization and graphics, statistical learning and data mining, model validation procedures, and the presentation of results. This course uses R as its primary computing language; details are determined by the instructor.
Concepts in Computing with Data: Read More [+]

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Summer: 10 weeks - 4 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Concepts in Computing with Data: Read Less [-]

STAT 134 Concepts of Probability 4 Units

Terms offered: Fall 2024, Summer 2024 8 Week Session, Spring 2024
An introduction to probability, emphasizing concepts and applications. Conditional expectation, independence, laws of large numbers. Discrete and continuous random variables. Central limit theorem. Selected topics such as the Poisson process, Markov chains, characteristic functions.
Concepts of Probability: Read More [+]

Rules & Requirements

Prerequisites: One year of calculus

Credit Restrictions: Students will not receive credit for 134 after taking 140 or 201A.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of discussion per week

Summer: 8 weeks - 6 hours of lecture and 4 hours of discussion per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Concepts of Probability: Read Less [-]

STAT 135 Concepts of Statistics 4 Units

Terms offered: Fall 2024, Summer 2024 8 Week Session, Spring 2024
A comprehensive survey course in statistical theory and methodology. Topics include descriptive statistics, maximum likelihood estimation, non-parametric methods, introduction to optimality, goodness-of-fit tests, analysis of variance, bootstrap and computer-intensive methods and least squares estimation. The laboratory includes computer-based data-analytic applications to science and engineering.
Concepts of Statistics: Read More [+]

Rules & Requirements

Prerequisites: STAT 134 or STAT 140; and MATH 54, EL ENG 16A, STAT 89A, MATH 110 or equivalent linear algebra. Strongly recommended corerequisite: STAT 133

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Summer: 8 weeks - 6 hours of lecture and 4 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Concepts of Statistics: Read Less [-]

STAT C140 Probability for Data Science 4 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023, Spring 2023
An introduction to probability, emphasizing the combined use of mathematics and programming. Discrete and continuous families of distributions. Bounds and approximations. Transforms and convergence. Markov chains and Markov Chain Monte Carlo. Dependence, conditioning, Bayesian methods. Maximum likelihood, least squares prediction, the multivariate normal, and multiple regression. Random permutations, symmetry, and order statistics. Use of numerical computation, graphics, simulation, and computer algebra.
Probability for Data Science: Read More [+]

Objectives & Outcomes

Course Objectives: Data/Stat C140 is a probability course for Data C8 graduates who have taken more mathematics and wish to go deeper into data science. The emphasis on simulation and the bootstrap in Data C8 gives students a concrete sense of randomness and sampling variability. Data/Stat C140 capitalizes on this, abstraction and computation complementing each other throughout. Topics in statistical theory are included to allow students to proceed to modeling and statistical learning classes without taking a further semester of mathematical statistics.

Student Learning Outcomes: Understand the difference between math and simulation, and appreciate the power of both
Use a variety of approaches to problem solving
Work with probability concepts algebraically, numerically, and graphically

Rules & Requirements

Prerequisites: DATA/COMPSCI/INFO/STAT C8, or both STAT 20 and one of COMPSCI 61A or COMPSCI/DATA C88C with C- or better, or Pass; and one year of calculus at the level of MATH 1A-1B or higher, with C- or better, or Pass. Corequisite: MATH 54, MATH 56, EECS 16B, MATH 110 or equivalent linear algebra (C- or better, or Pass, required if completed prior to enrollment in Data/Stat C140)

Credit Restrictions: Students will receive no credit for STAT C140 after completing STAT 134, or EECS 126.

Hours & Format

Fall and/or spring:
15 weeks - 3-3 hours of lecture, 1-1 hours of discussion, 1-1 hours of supplement, and 0-1 hours of voluntary per week
15 weeks - 3-3 hours of lecture, 2-2 hours of discussion, 0-0 hours of supplement, and 0-1 hours of voluntary per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: Statistics 140

Also listed as: DATA C140

Probability for Data Science: Read Less [-]

STAT 150 Stochastic Processes 3 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
Random walks, discrete time Markov chains, Poisson processes. Further topics such as: continuous time Markov chains, queueing theory, point processes, branching processes, renewal theory, stationary processes, Gaussian processes.
Stochastic Processes: Read More [+]
Rules & Requirements

Prerequisites: 101 or 103A or 134

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Stochastic Processes: Read Less [-]

STAT 151A Linear Modelling: Theory and Applications 4 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
A coordinated treatment of linear and generalized linear models and their application. Linear regression, analysis of variance and covariance, random effects, design and analysis of experiments, quality improvement, log-linear models for discrete multivariate data, model selection, robustness, graphical techniques, productive use of computers, in-depth case studies. This course uses either R or Python as its primary computing language, as determined by the instructor.
Linear Modelling: Theory and Applications: Read More [+]
Rules & Requirements

Prerequisites: STAT 135. STAT 133 recommended

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Linear Modelling: Theory and Applications: Read Less [-]

STAT 152 Sampling Surveys 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Theory and practice of sampling from finite populations. Simple random, stratified, cluster, and double sampling. Sampling with unequal probabilities. Properties of various estimators including ratio, regression, and difference estimators. Error estimation for complex samples.
Sampling Surveys: Read More [+]
Rules & Requirements

Prerequisites: 101 or 134. 133 and 135 recommended

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Sampling Surveys: Read Less [-]

STAT 153 Introduction to Time Series 4 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
An introduction to time series analysis in the time domain and spectral domain. Topics will include: estimation of trends and seasonal effects, autoregressive moving average models, forecasting, indicators, harmonic analysis, spectra. This course uses either R or Python as its primary computing language, as determined by the instructor.
Introduction to Time Series: Read More [+]
Rules & Requirements

Prerequisites: 134 or consent of instructor. 133 or 135 recommended

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Introduction to Time Series: Read Less [-]

STAT 154 Modern Statistical Prediction and Machine Learning 4 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
Theory and practice of statistical prediction. Contemporary methods as extensions of classical methods. Topics: optimal prediction rules, the curse of dimensionality, empirical risk, linear regression and classification, basis expansions, regularization, splines, the bootstrap, model selection, classification and regression trees, boosting, support vector machines. Computational efficiency versus predictive performance. Emphasis on experience with real data and assessing statistical assumptions. This course uses Python as its primary computing language; details are determined by the instructor.
Modern Statistical Prediction and Machine Learning: Read More [+]

Rules & Requirements

Prerequisites: Mathematics 53 or equivalent; Mathematics 54, Electrical Engineering 16A, Statistics 89A, Mathematics 110 or equivalent linear algebra; Statistics 135, the combination of Data/Stat C140 and Data/Stat/Compsci C100, or equivalent; experience with some programming language. Recommended prerequisite: Mathematics 55 or equivalent exposure to counting arguments

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Summer: 10 weeks - 4.5 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Modern Statistical Prediction and Machine Learning: Read Less [-]

STAT 155 Game Theory 3 Units

Terms offered: Fall 2024, Summer 2024 8 Week Session, Spring 2024
General theory of zero-sum, two-person games, including games in extensive form and continuous games, and illustrated by detailed study of examples.
Game Theory: Read More [+]

Rules & Requirements

Prerequisites: 101 or 134

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Summer: 8 weeks - 6 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Game Theory: Read Less [-]

STAT 156 Causal Inference 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
This course will focus on approaches to causal inference using the potential outcomes framework. It will also use causal diagrams at an intuitive level. The main topics are classical randomized experiments, observational studies, instrumental variables, principal stratification and mediation analysis. Applications are drawn from a variety of fields including political science, economics, sociology, public health, and medicine. This course is a mix of statistical theory and data analysis. Students will be exposed to statistical questions that are relevant to decision and policy making. This course uses R as its primary computing language; details are determined by the instructor.
Causal Inference: Read More [+]

Rules & Requirements

Prerequisites: Statistics 135

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Causal Inference: Read Less [-]

STAT 157 Seminar on Topics in Probability and Statistics 3 Units

Terms offered: Spring 2024, Fall 2023, Spring 2023
Substantial student participation required. The topics to be covered each semester that the course may be offered will be announced by the middle of the preceding semester; see departmental bulletins. Recent topics include: Bayesian statistics, statistics and finance, random matrix theory, high-dimensional statistics.
Seminar on Topics in Probability and Statistics: Read More [+]

Rules & Requirements

Prerequisites: Mathematics 53-54, Statistics 134, 135. Knowledge of scientific computing environment (R or Matlab) often required. Prerequisites might vary with instructor and topics

Repeat rules: Course may be repeated for credit with instructor consent.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Seminar on Topics in Probability and Statistics: Read Less [-]

STAT 158 Experimental Design 4 Units

Terms offered: Fall 2023, Spring 2023, Spring 2021
This course will review the statistical foundations of randomized experiments and study principles for addressing common setbacks in experimental design and analysis in practice. We will cover the notion of potential outcomes for causal inference and the Fisherian principles for experimentation (randomization, blocking, and replications). We will also cover experiments with complex structures (clustering in units, factorial design, hierarchy in treatments, sequential assignment, etc). We will also address practical complications in experiments, including noncompliance, missing data, and measurement error. This course uses R as its primary computing language; details are determined by the instructor.
Experimental Design: Read More [+]
Rules & Requirements

Prerequisites: Statistics 134 and Statistics 135 and experience with Software R, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Experimental Design: Read Less [-]

STAT 159 Reproducible and Collaborative Statistical Data Science 4 Units

Terms offered: Spring 2023, Spring 2022, Spring 2021
A project-based introduction to statistical data analysis. Through case studies, computer laboratories, and a term project, students will learn practical techniques and tools for producing statistically sound and appropriate, reproducible, and verifiable computational answers to scientific questions. Course emphasizes version control, testing, process automation, code review, and collaborative programming. Software tools may include Bash, Git, Python, and LaTeX.
Reproducible and Collaborative Statistical Data Science: Read More [+]
Rules & Requirements

Prerequisites: Statistics 133, Statistics 134, and Statistics 135 (or equivalent)

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Reproducible and Collaborative Statistical Data Science: Read Less [-]

STAT 165 Forecasting 3 Units

Terms offered: Spring 2024
Forecasting has been used to predict elections, climate change, and the spread of COVID-19. Poor forecasts led to the 2008 financial crisis. In our daily lives, good forecasting ability can help us plan our work, be on time to events, and make informed career decisions. This practically-oriented class will provide students with tools to make good forecasts, including Fermi estimates, calibration training, base rates, scope sensitivity, and power laws. This course uses Python as its primary computing language; details are determined by the instructor.
Forecasting: Read More [+]
Objectives & Outcomes

Course Objectives: Discuss several historical instances of successful and unsuccessful forecasts.
Practice making forecasts about our own lives, about current events, and about scientific progress

Student Learning Outcomes: Formulate questions that are relevant to their own life or work.
Identify well-defined versus poorly-defined forecasting questions.
Provide forecasts that are well-calibrated.
Understand common forecasting pitfalls, such as improper independence assumptions, and how to identify and guard against them.
Understand how forecasts evolve across time in response to new information.
Use forecasts to inform decisions.
Utilize a variety of forecasting tools, such as base rates, to improve their forecasts.
Utilize and filter data across a variety of sources to inform their forecasts.
Work in teams to improve forecasts.

Rules & Requirements

Prerequisites: Stat 134, Data/Stat C140, EECS 126, Math 106, IND ENG 172, or equivalent; and familiarity with Python; or consent of instructor. Strongly Recommended: Compsci 61A, Data/Compsci C88C, or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Forecasting: Read Less [-]

STAT H195 Special Study for Honors Candidates 1 - 4 Units

Terms offered: Spring 2015, Fall 2014, Fall 2010
Special Study for Honors Candidates: Read More [+]
Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
6 weeks - 1-5 hours of independent study per week
8 weeks - 1-4 hours of independent study per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Special Study for Honors Candidates: Read Less [-]

STAT 197 Field Study in Statistics 0.5 - 3 Units

Terms offered: Fall 2021, Fall 2020, Spring 2017
Supervised experience relevant to specific aspects of statistics in on-campus or off-campus settings. Individual and/or group meetings with faculty.
Field Study in Statistics: Read More [+]
Rules & Requirements

Credit Restrictions: Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog.

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 2-9 hours of fieldwork per week

Summer:
6 weeks - 3-22 hours of fieldwork per week
8 weeks - 2-16 hours of fieldwork per week
10 weeks - 2-12 hours of fieldwork per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

Field Study in Statistics: Read Less [-]

STAT 198 Directed Study for Undergraduates 1 - 3 Units

Terms offered: Spring 2024, Fall 2023, Spring 2023
Special tutorial or seminar on selected topics.
Directed Study for Undergraduates: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 1-3 hours of directed group study per week

Summer:
6 weeks - 2.5-7.5 hours of directed group study per week
8 weeks - 1.5-5.5 hours of directed group study per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

Directed Study for Undergraduates: Read Less [-]

STAT 199 Supervised Independent Study and Research 1 - 3 Units

Terms offered: Fall 2019, Fall 2018, Spring 2017
Supervised Independent Study and Research: Read More [+]
Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 1-3 hours of independent study per week

Summer:
6 weeks - 1-4 hours of independent study per week
8 weeks - 1-3 hours of independent study per week
10 weeks - 1-3 hours of independent study per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

Supervised Independent Study and Research: Read Less [-]

STAT 200A Introduction to Probability and Statistics at an Advanced Level 4 Units

Terms offered: Fall 2018, Fall 2011, Fall 2010
Probability spaces, random variables, distributions in probability and statistics, central limit theorem, Poisson processes, transformations involving random variables, estimation, confidence intervals, hypothesis testing, linear models, large sample theory, categorical models, decision theory.
Introduction to Probability and Statistics at an Advanced Level: Read More [+]

Rules & Requirements

Prerequisites: Multivariable calculus and one semester of linear algebra

Credit Restrictions: Students will receive no credit for Statistics 200A after completing Statistics 201A-201B.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Introduction to Probability and Statistics at an Advanced Level: Read Less [-]

STAT 200B Introduction to Probability and Statistics at an Advanced Level 4 Units

Terms offered: Spring 2019, Spring 2012, Spring 2011
Probability spaces, random variables, distributions in probability and statistics, central limit theorem, Poisson processes, transformations involving random variables, estimation, confidence intervals, hypothesis testing, linear models, large sample theory, categorical models, decision theory.
Introduction to Probability and Statistics at an Advanced Level: Read More [+]

Rules & Requirements

Prerequisites: Multivariable calculus and one semester of linear algebra

Credit Restrictions: Students will receive no credit for Statistics 200A-200B after completing Statistics 201A-201B.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Introduction to Probability and Statistics at an Advanced Level: Read Less [-]

STAT C200C Principles and Techniques of Data Science 4 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023, Spring 2023, Spring 2022, Spring 2021, Spring 2020
Explores the data science lifecycle: question formulation, data collection and cleaning, exploratory, analysis, visualization, statistical inference, prediction, and decision-making. Focuses on quantitative critical thinking and key principles and techniques: languages for transforming, querying and analyzing data; algorithms for machine learning methods: regression, classification and clustering; principles of informative visualization; measurement error and prediction; and techniques for scalable data processing. Research term project.
Principles and Techniques of Data Science: Read More [+]

Rules & Requirements

Prerequisites: COMPSCI C8 / INFO C8 / STAT C8 or ENGIN 7; and either COMPSCI 61A or COMPSCI 88. Corequisites: MATH 54 or EECS 16A

Credit Restrictions: Students will receive no credit for DATA C200\COMPSCI C200A\STAT C200C after completing DATA C100.

Hours & Format

Fall and/or spring:
8 weeks - 6-6 hours of lecture, 2-2 hours of discussion, and 0-2 hours of laboratory per week
15 weeks - 3-3 hours of lecture, 1-1 hours of discussion, and 0-1 hours of laboratory per week

Summer: 8 weeks - 6-6 hours of lecture, 2-2 hours of discussion, and 0-2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Formerly known as: Statistics C200C/Computer Science C200A

Also listed as: COMPSCI C200A/DATA C200

Principles and Techniques of Data Science: Read Less [-]

STAT 201A Introduction to Probability at an Advanced Level 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
Distributions in probability and statistics, central limit theorem, Poisson processes, modes of convergence, transformations involving random variables.
Introduction to Probability at an Advanced Level: Read More [+]

Rules & Requirements

Prerequisites: Undergraduate probability at the level of Statistics 134, multivariable calculus (at the level of Berkeley's Mathematics 53) and linear algebra (at the level of Berkeley's Mathematics 54)

Credit Restrictions: Students will receive no credit for STAT 201A after completing STAT 200A.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Introduction to Probability at an Advanced Level: Read Less [-]

STAT 201B Introduction to Statistics at an Advanced Level 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
Estimation, confidence intervals, hypothesis testing, linear models, large sample theory, categorical models, decision theory.
Introduction to Statistics at an Advanced Level: Read More [+]

Rules & Requirements

Prerequisites: Undergraduate probability at the level of Statistics 134, multivariable calculus (at the level of Berkeley's Mathematics 53) and linear algebra (at the level of Berkeley's Mathematics 54)

Credit Restrictions: Students will receive no credit for Statistics 201B after completing Statistics 200B.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Introduction to Statistics at an Advanced Level: Read Less [-]

STAT 204 Probability for Applications 4 Units

Terms offered: Fall 2023, Fall 2019, Spring 2017
A treatment of ideas and techniques most commonly found in the applications of probability: Gaussian and Poisson processes, limit theorems, large deviation principles, information, Markov chains and Markov chain Monte Carlo, martingales, Brownian motion and diffusion.
Probability for Applications: Read More [+]

Rules & Requirements

Credit Restrictions: Students will receive no credit for Statistics 204 after completing Statistics 205A-205B.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Instructor: Evans

Probability for Applications: Read Less [-]

STAT C205A Probability Theory 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
The course is designed as a sequence with Statistics C205B/ Mathematics C218B with the following combined syllabus. Measure theory concepts needed for probability. Expection, distributions. Laws of large numbers and central limit theorems for independent random variables. Characteristic function methods. Conditional expectations, martingales and martingale convergence theorems. Markov chains. Stationary processes. Brownian motion.
Probability Theory: Read More [+]

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Also listed as: MATH C218A

Probability Theory: Read Less [-]

STAT C205B Probability Theory 4 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
The course is designed as a sequence with with Statistics C205A/ Mathematics C218A with the following combined syllabus. Measure theory concepts needed for probability. Expection, distributions. Laws of large numbers and central limit theorems for independent random variables. Characteristic function methods. Conditional expectations, martingales and martingale convergence theorems. Markov chains. Stationary processes. Brownian motion.
Probability Theory: Read More [+]

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Also listed as: MATH C218B

Probability Theory: Read Less [-]

STAT C206A Advanced Topics in Probability and Stochastic Process 3 Units

Terms offered: Fall 2024, Fall 2020, Fall 2016, Fall 2014
The topics of this course change each semester, and multiple sections may be offered. Advanced topics in probability offered according to students demand and faculty availability.
Advanced Topics in Probability and Stochastic Process: Read More [+]

Rules & Requirements

Prerequisites: Statistics C205A-C205B or consent of instructor

Repeat rules: Course may be repeated for credit with instructor consent.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Also listed as: MATH C223A

Advanced Topics in Probability and Stochastic Process: Read Less [-]

STAT C206B Advanced Topics in Probability and Stochastic Processes 3 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
The topics of this course change each semester, and multiple sections may be offered. Advanced topics in probability offered according to students demand and faculty availability.
Advanced Topics in Probability and Stochastic Processes: Read More [+]

Rules & Requirements

Repeat rules: Course may be repeated for credit with instructor consent.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Also listed as: MATH C223B

Advanced Topics in Probability and Stochastic Processes: Read Less [-]

STAT 210A Theoretical Statistics 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
An introduction to mathematical statistics, covering both frequentist and Bayesian aspects of modeling, inference, and decision-making. Topics include statistical decision theory; point estimation; minimax and admissibility; Bayesian methods; exponential families; hypothesis testing; confidence intervals; small and large sample theory; and M-estimation.
Theoretical Statistics: Read More [+]

Rules & Requirements

Prerequisites: Linear algebra, real analysis, and a year of upper division probability and statistics

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Theoretical Statistics: Read Less [-]

STAT 210B Theoretical Statistics 4 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
Introduction to modern theory of statistics; empirical processes, influence functions, M-estimation, U and V statistics and associated stochastic decompositions; non-parametric function estimation and associated minimax theory; semiparametric models; Monte Carlo methods and bootstrap methods; distributionfree and equivariant procedures; topics in machine learning. Topics covered may vary with instructor.
Theoretical Statistics: Read More [+]

Rules & Requirements

Prerequisites: Statistics 210A and a graduate level probability course; a good understanding of various notions of stochastic convergence

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Theoretical Statistics: Read Less [-]

STAT 212A Topics in Theoretical Statistics 3 Units

Terms offered: Spring 2021, Fall 2015, Fall 2012
This course introduces the student to topics of current research interest in theoretical statistics. Recent topics include information theory, multivariate analysis and random matrix theory, high-dimensional inference. Typical topics have been model selection; empirical and point processes; the bootstrap, stochastic search, and Monte Carlo integration; information theory and statistics; semi- and non-parametric modeling; time series and survival analysis.
Topics in Theoretical Statistics: Read More [+]

Rules & Requirements

Prerequisites: 210 or 205 and 215

Repeat rules: Course may be repeated for credit with instructor consent.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Formerly known as: 216A-216B and 217A-217B

Topics in Theoretical Statistics: Read Less [-]

STAT 212B Topics in Theoretical Statistics 3 Units

Terms offered: Spring 2016
This course introduces the student to topics of current research interest in theoretical statistics. Recent topics include information theory, multivariate analysis and random matrix theory, high-dimensional inference. Typical topics have been model selection; empirical and point processes; the bootstrap, stochastic search, and Monte Carlo integration; information theory and statistics; semi- and non-parametric modeling; time series and survival analysis.
Topics in Theoretical Statistics: Read More [+]

Rules & Requirements

Prerequisites: 210 or 205 and 215

Repeat rules: Course may be repeated for credit with instructor consent.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Formerly known as: 216A-216B and 217A-217B

Topics in Theoretical Statistics: Read Less [-]

STAT 215A Applied Statistics and Machine Learning 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
Applied statistics and machine learning, focusing on answering scientific questions using data, the data science life cycle, critical thinking, reasoning, methodology, and trustworthy and reproducible computational practice. Hands-on-experience in open-ended data labs, using programming languages such as R and Python. Emphasis on understanding and examining the assumptions behind standard statistical models and methods and the match between the assumptions and the scientific question. Exploratory data analysis. Model formulation, fitting, model testing and validation, interpretation, and communication of results. Methods, including linear regression and generalizations, decision trees, random forests, simulation, and randomization methods.
Applied Statistics and Machine Learning: Read More [+]

Rules & Requirements

Prerequisites: Linear algebra, calculus, upper division probability and statistics, and familiarity with high-level programming languages. Statistics 133, 134, and 135 recommended

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Applied Statistics and Machine Learning: Read Less [-]

STAT 215B Statistical Models: Theory and Application 4 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
Course builds on 215A in developing critical thinking skills and the techniques of advanced applied statistics. Particular topics vary with instructor. Examples of possible topics include planning and design of experiments, ANOVA and random effects models, splines, classification, spatial statistics, categorical data analysis, survival analysis, and multivariate analysis.
Statistical Models: Theory and Application: Read More [+]
Rules & Requirements

Prerequisites: Statistics 215A or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Statistical Models: Theory and Application: Read Less [-]

STAT 222 Masters of Statistics Capstone Project 4 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
The capstone project is part of the masters degree program in statistics. Students engage in professionally-oriented group research under the supervision of a research advisor. The research synthesizes the statistical, computational, economic, and social issues involved in solving complex real-world problems.
Masters of Statistics Capstone Project: Read More [+]
Rules & Requirements

Prerequisites: Statistics 201A-201B, 243. Restricted to students who have been admitted to the one-year Masters Program in Statistics beginning fall 2012 or later

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar and 1 hour of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Masters of Statistics Capstone Project: Read Less [-]

STAT 230A Linear Models 4 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
Theory of least squares estimation, interval estimation, and tests under the general linear fixed effects model with normally distributed errors. Large sample theory for non-normal linear models. Two and higher way layouts, residual analysis. Effects of departures from the underlying assumptions. Robust alternatives to least squares.
Linear Models: Read More [+]
Rules & Requirements

Prerequisites: Matrix algebra, a year of calculus, two semesters of upper division or graduate probability and statistics

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Linear Models: Read Less [-]

STAT 232 Experimental Design 4 Units

Terms offered: Spring 2023, Spring 2022, Fall 2018
This course will review the statistical foundations of randomized experiments and study principles for addressing common setbacks in experimental design and analysis in practice. We will cover the notion of potential outcomes for causal inference and the Fisherian principles for experimentation (randomization, blocking, and replications). We will also cover experiments with complex structures (clustering in units, factorial design, hierarchy in treatments, sequential assignment, etc). We will also address practical complications in experiments, including noncompliance, missing data, and measurement error.
Experimental Design: Read More [+]
Rules & Requirements

Prerequisites: Statistics 134 and Statistics 135 and experience with Software R, or consent of instructor

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Experimental Design: Read Less [-]

STAT 238 Bayesian Statistics 3 Units

Terms offered: Fall 2016
Bayesian methods and concepts: conditional probability, one-parameter and multiparameter models, prior distributions, hierarchical and multi-level models, predictive checking and sensitivity analysis, model selection, linear and generalized linear models, multiple testing and high-dimensional data, mixtures, non-parametric methods. Case studies of applied modeling. In-depth computational implementation using Markov chain Monte Carlo and other techniques. Basic theory for Bayesian methods and decision theory. The selection of topics may vary from year to year.
Bayesian Statistics: Read More [+]

Objectives & Outcomes

Course Objectives: develop Bayesian models for new types of data
implement Bayesian models and interpret the results
read and discuss Bayesian methods in the literature
select and build appropriate Bayesian models for data to answer research questions
understand and describe the Bayesian perspective and its advantages and disadvantages compared to classical methods

Rules & Requirements

Prerequisites: Probability and mathematical statistics at the level of Stat 134 and Stat 135 or, ideally, Stat 201A and Stat 201B

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Bayesian Statistics: Read Less [-]

STAT 239A The Statistics of Causal Inference in the Social Science 4 Units

Terms offered: Fall 2015, Fall 2014
Approaches to causal inference using the potential outcomes framework. Covers observational studies with and without ignorable treatment assignment, randomized experiments with and without noncompliance, instrumental variables, regression discontinuity, sensitivity analysis and randomization inference. Applications are drawn from a variety of fields including political science, economics, sociology, public health and medicine.
The Statistics of Causal Inference in the Social Science: Read More [+]

Rules & Requirements

Prerequisites: At least one graduate matrix based multivariate regression course in addition to introductory statistics and probability

Hours & Format

Fall and/or spring: 15 weeks - 3-3 hours of lecture and 1-2 hours of discussion per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade. This is part one of a year long series course. A provisional grade of IP (in progress) will be applied and later replaced with the final grade after completing part two of the series.

Instructor: Sekhon

The Statistics of Causal Inference in the Social Science: Read Less [-]

STAT 239B Quantitative Methodology in the Social Sciences Seminar 4 Units

Terms offered: Spring 2016, Spring 2015
A seminar on successful research designs and a forum for students to discuss the research methods needed in their own work, supplemented by lectures on relevant statistical and computational topics such as matching methods, instrumental variables, regression discontinuity, and Bayesian, maximum likelihood and robust estimation. Applications are drawn from political science, economics, sociology, and public health. Experience with R is assumed.
Quantitative Methodology in the Social Sciences Seminar: Read More [+]

Rules & Requirements

Prerequisites: Statistics 239A or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 3-3 hours of lecture and 1-2 hours of discussion per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade. This is part two of a year long series course. Upon completion, the final grade will be applied to both parts of the series.

Quantitative Methodology in the Social Sciences Seminar: Read Less [-]

STAT C239A The Statistics of Causal Inference in the Social Science 4 Units

Terms offered: Fall 2018, Fall 2017, Fall 2016
Approaches to causal inference using the potential outcomes framework. Covers observational studies with and without ignorable treatment assignment, randomized experiments with and without noncompliance, instrumental variables, regression discontinuity, sensitivity analysis and randomization inference. Applications are drawn from a variety of fields including political science, economics, sociology, public health and medicine.
The Statistics of Causal Inference in the Social Science: Read More [+]
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Also listed as: POL SCI C236A

The Statistics of Causal Inference in the Social Science: Read Less [-]

STAT C239B Quantitative Methodology in the Social Sciences Seminar 4 Units

Terms offered: Spring 2018, Spring 2017
A seminar on successful research designs and a forum for students to discuss the research methods needed in their own work, supplemented by lectures on relevant statistical and computational topics such as matching methods, instrumental variables, regression discontinuity, and Bayesian, maximum likelihood and robust estimation. Applications are drawn from political science, economics, sociology, and public health. Experience with R is assumed.
Quantitative Methodology in the Social Sciences Seminar: Read More [+]
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Also listed as: POL SCI C236B

Quantitative Methodology in the Social Sciences Seminar: Read Less [-]

STAT 240 Nonparametric and Robust Methods 4 Units

Terms offered: Spring 2023, Spring 2021, Fall 2017
Standard nonparametric tests and confidence intervals for continuous and categorical data; nonparametric estimation of quantiles; robust estimation of location and scale parameters. Efficiency comparison with the classical procedures.
Nonparametric and Robust Methods: Read More [+]
Rules & Requirements

Prerequisites: A year of upper division probability and statistics

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Nonparametric and Robust Methods: Read Less [-]

STAT C241A Statistical Learning Theory 3 Units

Terms offered: Fall 2023, Fall 2021, Fall 2020
Classification regression, clustering, dimensionality, reduction, and density estimation. Mixture models, hierarchical models, factorial models, hidden Markov, and state space models, Markov properties, and recursive algorithms for general probabilistic inference nonparametric methods including decision trees, kernal methods, neural networks, and wavelets. Ensemble methods.
Statistical Learning Theory: Read More [+]
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Instructors: Bartlett, Jordan, Wainwright

Also listed as: COMPSCI C281A

Statistical Learning Theory: Read Less [-]

STAT C241B Advanced Topics in Learning and Decision Making 3 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
Recent topics include: Graphical models and approximate inference algorithms. Markov chain Monte Carlo, mean field and probability propagation methods. Model selection and stochastic realization. Bayesian information theoretic and structural risk minimization approaches. Markov decision processes and partially observable Markov decision processes. Reinforcement learning.
Advanced Topics in Learning and Decision Making: Read More [+]
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Instructors: Bartlett, Jordan, Wainwright

Also listed as: COMPSCI C281B

Advanced Topics in Learning and Decision Making: Read Less [-]

STAT 243 Introduction to Statistical Computing 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
Concepts in statistical programming and statistical computation, including programming principles, data and text manipulation, parallel processing, simulation, numerical linear algebra, and optimization.
Introduction to Statistical Computing: Read More [+]
Objectives & Outcomes

Student Learning Outcomes: Become familiar with concepts and tools for reproducible research and good scientific computing practices. Operate effectively in a UNIX environment and on remote servers. Program effectively in languages including R and Python with an advanced knowledge of language functionality and an understanding of general programming concepts.
Understand in depth and make use of principles of numerical linear algebra, optimization, and simulation for statistics-related research.

Rules & Requirements

Prerequisites: Graduate standing

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Introduction to Statistical Computing: Read Less [-]

STAT 244 Statistical Computing 4 Units

Terms offered: Spring 2011, Spring 2010, Spring 2009
Algorithms in statistical computing: random number generation, generating other distributions, random sampling and permutations. Matrix computations in linear models. Non-linear optimization with applications to statistical procedures. Other topics of current interest, such as issues of efficiency, and use of graphics.
Statistical Computing: Read More [+]
Rules & Requirements

Prerequisites: Knowledge of a higher level programming language

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Statistical Computing: Read Less [-]

STAT C245A Introduction to Modern Biostatistical Theory and Practice 4 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
Course covers major topics in general statistical theory, with a focus on statistical methods in epidemiology. The course provides a broad theoretical framework for understanding the properties of commonly-used and more advanced methods. Emphasis is on estimation in nonparametric models in the context of contingency tables, regression (e.g., linear, logistic), density estimation and more. Topics include maximum likelihood and loss-based estimation, asymptotic linearity/normality, the delta method, bootstrapping, machine learning, targeted maximum likelihood estimation. Comprehension of broad concepts is the main goal, but practical implementation in R is also emphasized. Basic knowledge of probability/statistics and calculus are assume
Introduction to Modern Biostatistical Theory and Practice: Read More [+]
Rules & Requirements

Prerequisites: Statistics 200A (may be taken concurrently)

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Instructor: Hubbard

Also listed as: PB HLTH C240A

Introduction to Modern Biostatistical Theory and Practice: Read Less [-]

STAT C245B Biostatistical Methods: Survival Analysis and Causality 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
Analysis of survival time data using parametric and non-parametric models, hypothesis testing, and methods for analyzing censored (partially observed) data with covariates. Topics include marginal estimation of a survival function, estimation of a generalized multivariate linear regression model (allowing missing covariates and/or outcomes), estimation of a multiplicative intensity model (such as Cox proportional hazards model) and estimation of causal parameters assuming marginal structural models. General theory for developing locally efficient estimators of the parameters of interest in censored data models. Computing techniques, numerical methods, simulation and general implementation of biostatistical analysis techniques with emphasis on data applications.
Biostatistical Methods: Survival Analysis and Causality: Read More [+]
Rules & Requirements

Prerequisites: Statistics 200B (may be taken concurrently)

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Instructor: van der Laan

Also listed as: PB HLTH C240B

Biostatistical Methods: Survival Analysis and Causality: Read Less [-]

STAT C245C Biostatistical Methods: Computational Statistics with Applications in Biology and Medicine 4 Units

Terms offered: Fall 2023, Fall 2022, Fall 2021
This course provides an introduction to computational statistics, with emphasis on statistical methods and software for addressing high-dimensional inference problems in biology and medicine. Topics include numerical and graphical data summaries, loss-based estimation (regression, classification, density estimation), smoothing, EM algorithm, Markov chain Monte-Carlo, clustering, multiple testing, resampling, hidden Markov models, in silico experiments.
Biostatistical Methods: Computational Statistics with Applications in Biology and Medicine: Read More [+]
Rules & Requirements

Prerequisites: Statistics 200A or equivalent (may be taken concurrently)

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Instructor: Dudoit

Also listed as: PB HLTH C240C

Biostatistical Methods: Computational Statistics with Applications in Biology and Medicine: Read Less [-]

STAT C245D Biostatistical Methods: Computational Statistics with Applications in Biology and Medicine II 4 Units

Terms offered: Fall 2017, Fall 2015, Fall 2013

This course and Pb Hlth C240C/Stat C245C provide an introduction to computational statistics with emphasis on statistical methods and software for addressing high-dimensional inference problems that arise in current biological and medical research. The courses also discusses statistical computing resources, with emphasis on the R language and environment (www.r-project.org). Programming topics to be discussed include: data structures, functions, statistical models, graphical procedures, designing an R package, object-oriented programming, inter-system interfaces. The statistical and computational methods are motivated by and illustrated on data structures that arise in current high-dimensional inference problems in biology and medicine.

Biostatistical Methods: Computational Statistics with Applications in Biology and Medicine II: Read More [+]

Rules & Requirements

Prerequisites: Statistics 200A-200B or Statistics 201A-201B (may be taken concurrently) or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Instructor: Dudoit

Also listed as: PB HLTH C240D

Biostatistical Methods: Computational Statistics with Applications in Biology and Medicine II: Read Less [-]

STAT C245F Statistical Genomics 4 Units

Terms offered: Spring 2022, Spring 2021, Spring 2020, Spring 2018, Spring 2017

Genomics is one of the fundamental areas of research in the biological sciences and is rapidly becoming one of the most important application areas in statistics. The first course in this two-semester sequence is Public Health C240E/Statistics C245E. This is the second course, which focuses on sequence analysis, phylogenetics, and high-throughput microarray and sequencing gene expression experiments. The courses are primarily intended for graduate students and advanced undergraduate students from the mathematical sciences.

Statistical Genomics: Read More [+]

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Instructors: Dudoit, Huang, Nielsen, Song

Also listed as: PB HLTH C240F

Statistical Genomics: Read Less [-]

STAT C247C Longitudinal Data Analysis 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2021
Course covers statistical issues surrounding estimation of effects using data on units followed through time. Course emphasizes a regression model approach for estimating associations of disease incidence modeling, continuous outcome data/linear models & longitudinal extensions to nonlinear models forms (e.g., logistic). Course emphasizes complexities that repeated measures has on the estimation process & opportunities it provides if data is modeled appropriately. Most time is spent on 2 approaches: mixed models based upon explicit (latent variable) maximum likelihood estimation of the sources of the dependence, versus empirical estimating equation approaches (generalized estimating equations). Primary focus is from the analysis side.
Longitudinal Data Analysis: Read More [+]
Objectives & Outcomes

Course Objectives: After successfully completing the course, you will be able to:

•

frame data science questions relevant to longitudinal studies as the estimation of statistical parameters generated from regression,

•

derive consistent statistical inference in the presence of correlated, repeated measures data using likelihood-based mixed models and estimating equation approaches (generalized estimating equations; GEE),

•

implement the relevant methods using R.

•

interpret the regression output, including both coefficients and variance components and

Rules & Requirements

Prerequisites: 142, 145, 241 or equivalent courses in basic statistics, linear and logistic regression

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Instructor: Hubbard

Also listed as: PB HLTH C242C

Longitudinal Data Analysis: Read Less [-]

STAT 248 Analysis of Time Series 4 Units

Terms offered: Spring 2022, Spring 2021, Spring 2020
Frequency-based techniques of time series analysis, spectral theory, linear filters, estimation of spectra, estimation of transfer functions, design, system identification, vector-valued stationary processes, model building.
Analysis of Time Series: Read More [+]
Rules & Requirements

Prerequisites: 102 or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Analysis of Time Series: Read Less [-]

STAT 251 Stochastic Analysis with Applications to Mathematical Finance 3 Units

Terms offered: Spring 2008, Spring 2006, Spring 2005
The essentials of stochastic analysis, particularly those most relevant to financial engineering, will be surveyed: Brownian motion, stochastic integrals, Ito's formula, representation of martingales, Girsanov's theorem, stochastic differential equations, and diffusion processes. Examples will be taken from the Black-Scholes-Merton theory of pricing and hedging contingent claims such as options, foreign market derivatives, and interest rate related contracts.
Stochastic Analysis with Applications to Mathematical Finance: Read More [+]
Rules & Requirements

Prerequisites: 205A or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Stochastic Analysis with Applications to Mathematical Finance: Read Less [-]

STAT 254 Modern Statistical Prediction and Machine Learning 4 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
This course is about statistical learning methods and their use for data analysis. Upon completion, students will be able to build baseline models for real world data analysis problems, implement models using programming languages and draw conclusions from models. The course will cover principled statistical methodology for basic machine learning tasks such as regression, classification, dimension reduction and clustering. Methods discussed will include linear regression, subset selection, ridge regression, LASSO, logistic regression, kernel smoothing methods, tree based methods, bagging and boosting, neural networks, Bayesian methods, as well as inference techniques based on resampling, cross validation and sample splitting.
Modern Statistical Prediction and Machine Learning: Read More [+]
Rules & Requirements

Prerequisites: STAT 135, the combination of DATA/STAT/COMPSCI C100 and DATA/STAT C140, or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Modern Statistical Prediction and Machine Learning: Read Less [-]

STAT 256 Causal Inference 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
This course will focus on approaches to causal inference using the potential outcomes framework. It will also use causal diagrams at an intuitive level. The main topics are classical randomized experiments, observational studies, instrumental variables, principal stratification and mediation analysis. Applications are drawn from a variety of fields including political science, economics, sociology, public health, and medicine. This course is a mix of statistical theory and data analysis. Students will be exposed to statistical questions that are relevant to decision and policy making.
Causal Inference: Read More [+]
Rules & Requirements

Prerequisites: Statistics 201B or Statistics 210A

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Causal Inference: Read Less [-]

STAT 259 Reproducible and Collaborative Statistical Data Science 4 Units

Terms offered: Spring 2023, Spring 2022, Spring 2021
A project-based introduction to statistical data analysis. Through case studies, computer laboratories, and a term project, students will learn practical techniques and tools for producing statistically sound and appropriate, reproducible, and verifiable computational answers to scientific questions. Course emphasizes version control, testing, process automation, code review, and collaborative programming. Software tools may include Bash, Git, Python, and LaTeX.
Reproducible and Collaborative Statistical Data Science: Read More [+]
Rules & Requirements

Prerequisites: Statistics 133, Statistics 134, and Statistics 135 (or equivalent)

Credit Restrictions: Students will receive no credit for Statistics 259 after taking Statistics 159.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Reproducible and Collaborative Statistical Data Science: Read Less [-]

STAT 260 Topics in Probability and Statistics 3 Units

Terms offered: Fall 2024, Spring 2024, Spring 2023
Special topics in probability and statistics offered according to student demand and faculty availability.
Topics in Probability and Statistics: Read More [+]
Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Topics in Probability and Statistics: Read Less [-]

STAT C261 Quantitative/Statistical Research Methods in Social Sciences 3 Units

Terms offered: Spring 2016, Spring 2015, Spring 2014
Selected topics in quantitative/statistical methods of research in the social sciences and particularly in sociology. Possible topics include: analysis of qualitative/categorical data; loglinear models and latent-structure analysis; the analysis of cross-classified data having ordered and unordered categories; measure, models, and graphical displays in the analysis of cross-classified data; correspondence analysis, association analysis, and related methods of data analysis.
Quantitative/Statistical Research Methods in Social Sciences: Read More [+]

Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Also listed as: SOCIOL C271D

Quantitative/Statistical Research Methods in Social Sciences: Read Less [-]

STAT 265 Forecasting 3 Units

Terms offered: Spring 2024
Forecasting has been used to predict elections, climate change, and the spread of COVID-19. Poor forecasts led to the 2008 financial crisis. In our daily lives, good forecasting ability can help us plan our work, be on time to events, and make informed career decisions. This practically-oriented class will provide students with tools to make good forecasts, including Fermi estimates, calibration training, base rates, scope sensitivity, and power laws.
Forecasting: Read More [+]

Objectives & Outcomes

Course Objectives: We'll discuss several historical instances of successful and unsuccessful forecasts, and practice making forecasts about our own lives, about current events, and about scientific progress.

Student Learning Outcomes: Formulate questions that are relevant to their own life or work.
Identify well-defined versus poorly-defined forecasting questions.
Provide forecasts that are well-calibrated.
Understand common forecasting pitfalls, such as improper independence assumptions, and how to identify and guard against them.
Understand how forecasts evolve across time in response to new information.
Use forecasts to inform decisions.
Utilize a variety of forecasting tools, such as base rates, to improve their forecasts.

Utilize and filter data across a variety of sources to inform their forecasts.
Work in teams to improve forecasts.

Rules & Requirements

Prerequisites: Stat 134, Data/Stat C140, EECS 126, Math 106, IND ENG 172, or equivalent; and familiarity with Python; or consent of instructor. Strongly Recommended: Compsci 61A, Data/Compsci C88C, or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Forecasting: Read Less [-]

STAT 272 Statistical Consulting 3 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
To be taken concurrently with service as a consultant in the department's drop-in consulting service. Participants will work on problems arising in the service and will discuss general ways of handling such problems. There will be working sessions with researchers in substantive fields and occasional lectures on consulting.
Statistical Consulting: Read More [+]

Rules & Requirements

Prerequisites: Some course work in applied statistics and permission of instructor

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of session per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Statistical Consulting: Read Less [-]

STAT 278B Statistics Research Seminar 1 - 4 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
Special topics, by means of lectures and informational conferences.
Statistics Research Seminar: Read More [+]

Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of seminar per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Statistics Research Seminar: Read Less [-]

STAT 298 Directed Study for Graduate Students 1 - 12 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
Special tutorial or seminar on selected topics.
Directed Study for Graduate Students: Read More [+]

Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
6 weeks - 1-16 hours of independent study per week
8 weeks - 1-12 hours of independent study per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Directed Study for Graduate Students: Read Less [-]

STAT 299 Individual Study Leading to Higher Degrees 0.5 - 12 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
Individual study
Individual Study Leading to Higher Degrees: Read More [+]

Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 2-36 hours of independent study per week

Summer:
6 weeks - 4-45 hours of independent study per week
8 weeks - 3-36 hours of independent study per week
10 weeks - 2.5-27 hours of independent study per week

Additional Details

Subject/Course Level: Statistics/Graduate

Grading: Letter grade.

Individual Study Leading to Higher Degrees: Read Less [-]

STAT 375 Professional Preparation: Teaching of Probability and Statistics 2 - 4 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
Discussion, problem review and development, guidance of laboratory classes, course development, supervised practice teaching.
Professional Preparation: Teaching of Probability and Statistics: Read More [+]

Rules & Requirements

Prerequisites: Graduate standing and appointment as a graduate student instructor

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 4 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Professional course for teachers or prospective teachers

Grading: Offered for satisfactory/unsatisfactory grade only.

Formerly known as: Statistics 300

Professional Preparation: Teaching of Probability and Statistics: Read Less [-]

STAT 601 Individual Study for Master's Candidates 0.5 - 8 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
Individual study in consultation with the graduate adviser, intended to provide an opportunity for qualified students to prepare themselves for the master's comprehensive examinations. Units may not be used to meet either unit or residence requirements for a master's degree.
Individual Study for Master's Candidates: Read More [+]

Rules & Requirements

Repeat rules: Course may be repeated for credit up to a total of 16 units.

Hours & Format

Fall and/or spring: 15 weeks - 0.5-8 hours of independent study per week

Summer:
6 weeks - 1.5-20 hours of independent study per week
8 weeks - 1-15 hours of independent study per week
10 weeks - 1-12 hours of independent study per week

Additional Details

Subject/Course Level: Statistics/Graduate examination preparation

Grading: Offered for satisfactory/unsatisfactory grade only.

Individual Study for Master's Candidates: Read Less [-]

STAT 602 Individual Study for Doctoral Candidates 0.5 - 8 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023
Individual study in consultation with the graduate adviser, intended to provide an opportunity for qualified students to prepare themselves for certain examinations required of candidates for the Ph.D. degree.
Individual Study for Doctoral Candidates: Read More [+]

Rules & Requirements

Prerequisites: One year of full-time graduate study and permission of the graduate adviser

Credit Restrictions: Course does not satisfy unit or residence requirements for doctoral degree.

Repeat rules: Course may be repeated for credit up to a total of 16 units.

Hours & Format

Fall and/or spring: 15 weeks - 0.5-8 hours of independent study per week

Summer:
6 weeks - 1.5-20 hours of independent study per week
8 weeks - 1-15 hours of independent study per week
10 weeks - 1-12 hours of independent study per week

Additional Details

Subject/Course Level: Statistics/Graduate examination preparation

Grading: Offered for satisfactory/unsatisfactory grade only.

Individual Study for Doctoral Candidates: Read Less [-]

STAT 700 Statistics Colloquium 0.0 Units

Terms offered: Prior to 2007
The Statistics Colloquium is a forum for talks on the theory and applications of Statistics to be given to the faculty and graduate students of the Statistics Department and other interested parties.
Statistics Colloquium: Read More [+]

Hours & Format

Fall and/or spring: 15 weeks - 1-2 hours of colloquium per week

Additional Details

Subject/Course Level: Statistics/Graduate examination preparation

Grading: The grading option will be decided by the instructor when the class is offered.

Formerly known as: Statistics 999

Statistics Colloquium: Read Less [-]