

Statistics

Bachelor of Arts (BA)

The undergraduate major at Berkeley provides a systematic and thorough grounding in applied and theoretical statistics as well as probability. The quality and dedication of the teaching staff and faculty are extremely high. A major in Statistics from Berkeley is an excellent preparation for a career in science or industry, or for further academic study in a wide variety of fields. The department has particular strength in Machine Learning, a key ingredient of the emerging field of Data Science. It is also very useful to combine studies of statistics and probability with other subjects. Our department excels at interdisciplinary science, and more than half of the department's undergraduate students are double or triple majors.

Students interested in teaching statistics and mathematics in middle or high school should pursue the teaching option within the major. Students interested in teaching should also consider the Cal Teach Program (<http://calteach.berkeley.edu>).

Declaring the Major

Students should apply in the semester they will complete their prerequisites. For applicants with prerequisites in progress, applications will be reviewed after the grades for all prerequisites are available, 2-3 weeks after finals. For applicants who have completed all prerequisites in a previous term, applications will be reviewed and processed within a week.

For detailed information regarding the process of declaring the major, please see the Statistics Department website. (<http://statistics.berkeley.edu/programs/undergrad/major/#HowtoDeclare>)

Minor Program

The minor is for students who want to study a significant amount of statistics and probability at the upper division level. For information regarding the requirements, please see the Minor Requirements tab on this page.

For detailed information regarding the process of declaring the minor, please see the Statistics Department website. (<http://statistics.berkeley.edu/programs/undergrad/minor>)

In addition to the University, campus, and college requirements, listed on the College Requirements tab, students must fulfill the below requirements specific to their major program.

General Guidelines

1. All courses taken to fulfill the major requirements below must be taken for graded credit, other than courses listed which are offered on a *Pass/No Pass* basis only. Other exceptions to this requirement are noted as applicable.
2. No more than one upper division course may be used to simultaneously fulfill requirements for a student's major and minor programs, with the exception of minors offered outside of the College of Letters & Science.
3. A minimum grade point average (GPA) of 2.0 must be maintained in both upper and lower division courses used to fulfill the major requirements.

For information regarding residency requirements and unit requirements, please see the College Requirements tab.

Lower Division Prerequisites (Four Courses)

Students must earn a minimum 3.2 UC grade point average in the lower division math prerequisites with no lower than a C in each. ¹

MATH 1A	Calculus	4
MATH 1B	Calculus	4
MATH 53	Multivariable Calculus	4
MATH 54	Linear Algebra and Differential Equations	4

Upper Division Requirements (Nine Courses)

Core Statistics Courses (3)

STAT 133	Concepts in Computing with Data	3
STAT 134	Concepts of Probability ^{2, 3}	4
or STAT 140	Probability for Data Science	
STAT 135	Concepts of Statistics ³	4

Statistics Electives (3)

Select three statistics electives from the following; at least one of the selections must have a lab: 10-12

STAT 150	Stochastic Processes	
STAT 151A	Linear Modelling: Theory and Applications (LAB COURSE)	
STAT 152	Sampling Surveys (LAB COURSE)	
STAT 153	Introduction to Time Series (LAB COURSE)	
STAT 154	Modern Statistical Prediction and Machine Learning (LAB COURSE)	
STAT 155	Game Theory	
STAT 157	Seminar on Topics in Probability and Statistics	
STAT 158	The Design and Analysis of Experiments (LAB COURSE)	
STAT 159	Reproducible and Collaborative Statistical Data Science (LAB COURSE)	

Applied Cluster Courses (3)

Select three applied cluster courses. See Cluster Course Information 9-12 and Approved Cluster Courses below the Teaching Option requirements.

Upper Division Requirements: Teaching Option (Nine Courses)

Core Statistics Courses (3)

STAT 133	Concepts in Computing with Data	3
STAT 134	Concepts of Probability ^{2, 3}	4
or STAT 140	Probability for Data Science	
STAT 135	Concepts of Statistics ³	4

Statistics Electives (2)

Select two of the following; at least one course must include a lab: 7-8

STAT 150	Stochastic Processes	
STAT 151A	Linear Modelling: Theory and Applications (LAB COURSE)	
STAT 152	Sampling Surveys (LAB COURSE)	
STAT 153	Introduction to Time Series (LAB COURSE)	

STAT 154	Modern Statistical Prediction and Machine Learning (LAB COURSE)
STAT 155	Game Theory
STAT 157	Seminar on Topics in Probability and Statistics
STAT 158	The Design and Analysis of Experiments (LAB COURSE)
STAT 159	Reproducible and Collaborative Statistical Data Science (LAB COURSE)

Teaching Track Cluster (4)

MATH 110	Linear Algebra	4
MATH 113	Introduction to Abstract Algebra	4
MATH 151	Mathematics of the Secondary School Curriculum I	4
MATH 152	Mathematics of the Secondary School Curriculum II	4
or MATH 153	Mathematics of the Secondary School Curriculum III	

¹ Students who have completed any of the math prerequisites at a non-UC institution should look at the Statistics Major Frequently Asked Questions (<http://statistics.berkeley.edu/programs/undergrad/major/faq>) on the Statistics Department website.

² Other non-statistics UC Berkeley courses, such as IND ENG 172, cannot be used to fulfill this requirement

³ At least a B- in either STAT 134, STAT 140, or STAT 135 is a prerequisite to declare the major, with no more than one course repeated between STAT 134, STAT 140 and STAT 135.

Cluster Course Information

The applied cluster is a chance to learn about areas in which statistics can be applied and to learn specialized techniques not taught in the Statistics Department. Students need to design their own applied cluster. The courses should have a unifying theme. Picking their own applied cluster is a valuable exercise that gives students a chance to explore and refine their interests and to develop a coherent course of study. A preapproved list has been provided below. However, it is not exhaustive. If students would like to use a course that is not on the list, the undergraduate major faculty adviser must approve it. Clusters may consist of courses from more than one department, but at least two must be approved courses from the same department. Students' choices should reflect a theme so that students study some area of application in breadth and depth. Cluster courses should meet the following criteria:

1. Courses must be upper division courses and at least 3 units.
2. Courses in the biological and physical sciences, chemistry, and engineering are often acceptable.
3. Courses in social sciences must be quantitative.
4. Courses with statistics prerequisites are often acceptable.
5. Courses that are similar to courses offered in the Statistics Department are not acceptable.
6. Courses that primarily teach how to use a particular software package are not acceptable.
7. Courses that focus on the use of spreadsheet software (e.g., UGBA 104) are not acceptable.
8. Courses should be taken in the home department. For instance, economics classes should be taken in the economics or business department.

9. Seminars and special topics courses require approval by the undergraduate faculty adviser.

Approved Cluster Courses

Of the three applied cluster courses required for the major, at least two must be approved courses from the same department. This is not an exhaustive list.

ANTHRO C100	Human Paleontology	5
ANTHRO C103	Introduction to Human Osteology	6
ANTHRO 115	Introduction to Medical Anthropology	4
ANTHRO 121C	Historical Archaeology: Historical Artifact Identification and Analysis	4
ANTHRO C124C/ INTEG BI C187	Human Biogeography of the Pacific	3
ANTHRO 127A	Bioarchaeology: Introduction to Skeletal Biology and Bioarchaeology	4
ANTHRO 127B	Bioarchaeology: Reconstruction of Life in Bioarchaeology	4
ANTHRO C129D/ INTEG BI C155	Holocene Paleoecology: How Humans Changed the Earth	3
ANTHRO 132A	Analysis of Archaeological Materials: Analysis of Archaeological Ceramics	4
ANTHRO 135	Paleoethnobotany: Archaeological Methods and Laboratory Techniques	4
ANTHRO 169B	Research Theory and Methods in Socio-Cultural Anthropology	5
ARCH 140	Energy and Environment	4
ARCH 150	Introduction to Structures	4
ARCH 154	Design and Computer Analysis of Structure	3
ASTRON 160	Stellar Physics	4
ASTRON C161	Relativistic Astrophysics and Cosmology	4
ASTRON C162	Planetary Astrophysics	4
BIO ENG 104	Biological Transport Phenomena	4
BIO ENG C112	Molecular Biomechanics and Mechanobiology of the Cell	4
BIO ENG C117	Structural Aspects of Biomaterials	4
BIO ENG C119	Orthopedic Biomechanics	4
BIO ENG C125	Introduction to Robotics	4
BIO ENG C125B	Robotic Manipulation and Interaction	4
BIO ENG 131	Introduction to Computational Molecular and Cell Biology	4
BIO ENG C136L	Laboratory in the Mechanics of Organisms	3
BIO ENG C137	Designing for the Human Body	3
BIO ENG 144	Introduction to Protein Informatics	4
BIO ENG C145L	Introductory Electronic Transducers Laboratory	3
BIO ENG C145M	Introductory Microcomputer Interfacing Laboratory	3
BIO ENG 147	Principles of Synthetic Biology	4
BIO ENG C165	Medical Imaging Signals and Systems	4
BIO ENG C181	The Berkeley Lectures on Energy: Energy from Biomass	3
CHM ENG 140	Introduction to Chemical Process Analysis	4
CHM ENG 141	Chemical Engineering Thermodynamics	4
CHM ENG C195A	The Berkeley Lectures on Energy: Energy from Biomass	3

CHEM C110L	General Biochemistry and Molecular Biology Laboratory	4	ECON 101B	Economic Theory--Macro	4
CHEM 120A	Physical Chemistry	3	ECON C102	Natural Resource Economics	4
CHEM 120B	Physical Chemistry	3	ECON C103	Introduction to Mathematical Economics	4
CHEM C130	Biophysical Chemistry: Physical Principles and the Molecules of Life	4	ECON 104	Advanced Microeconomic Theory	4
CHEM C138	The Berkeley Lectures on Energy: Energy from Biomass	3	ECON 119	Psychology and Economics	4
CY PLAN 101	Introduction to Urban Data Analytics	4	ECON 121	Industrial Organization and Public Policy	4
CY PLAN 118AC	The Urban Community	4	ECON C125	Environmental Economics	4
CY PLAN 119	Planning for Sustainability	3	ECON 131	Public Economics	4
CIV ENG 100	Elementary Fluid Mechanics	4	Only one from the following may be used in an applied cluster for the Statistics major:		
CIV ENG 103	Introduction to Hydrology	3	ECON 136	Financial Economics	
CIV ENG C106	Air Pollution	3	ENGIN 120	Principles of Engineering Economics	
CIV ENG C116	Chemistry of Soils	3	UGBA 103	Introduction to Finance	
CIV ENG C133	Engineering Analysis Using the Finite Element Method	3	ECON 138	Financial and Behavioral Economics	4
CIV ENG 155	Transportation Systems Engineering	3	ECON 141	Econometric Analysis	4
COG SCI C100	Basic Issues in Cognition	3	ECON C142	Applied Econometrics and Public Policy	4
COG SCI C101	Cognitive Linguistics	4	ECON 157	Health Economics	4
COG SCI C102	Scientific Approaches to Consciousness	3	ECON 174	Global Poverty and Impact Evaluation	4
COG SCI C126	Perception	3	ECON C175	Economic Demography	3
COG SCI C127	Cognitive Neuroscience	3	or ECON N175	Economic Demography	
COG SCI 131	Computational Models of Cognition	4	ECON C181	International Trade	4
COG SCI C140	Quantitative Methods in Linguistics	4	ECON 182	International Monetary Economics	4
COG SCI C147	Language Disorders	3	EL ENG 105	Microelectronic Devices and Circuits	4
COMPSCI C149	Course Not Available	4	EL ENG C106A	Introduction to Robotics	4
COMPSCI 152	Computer Architecture and Engineering	4	EL ENG C106B	Robotic Manipulation and Interaction	4
COMPSCI 160	User Interface Design and Development	4	EL ENG 113	Power Electronics	4
COMPSCI 161	Computer Security	4	EL ENG 117	Electromagnetic Fields and Waves	4
COMPSCI 162	Operating Systems and System Programming	4	EL ENG 118	Introduction to Optical Engineering	3
COMPSCI 164	Programming Languages and Compilers	4	EL ENG 120	Signals and Systems	4
COMPSCI 168	Introduction to the Internet: Architecture and Protocols	4	EL ENG 121	Introduction to Digital Communication Systems	4
COMPSCI 169	Software Engineering	4	EL ENG 122	Introduction to Communication Networks	4
COMPSCI 170	Efficient Algorithms and Intractable Problems	4	EL ENG 123	Digital Signal Processing	4
COMPSCI 172	Computability and Complexity	4	EL ENG C128	Feedback Control Systems	4
COMPSCI 176	Algorithms for Computational Biology	4	EL ENG 129	Neural and Nonlinear Information Processing	3
COMPSCI 184	Foundations of Computer Graphics	4	EL ENG 130	Integrated-Circuit Devices	4
COMPSCI 186	Introduction to Database Systems	4	EL ENG 134	Fundamentals of Photovoltaic Devices	4
COMPSCI 188	Introduction to Artificial Intelligence	4	EL ENG 137A	Introduction to Electric Power Systems	4
COMPSCI 189	Introduction to Machine Learning	4	EL ENG 137B	Introduction to Electric Power Systems	4
NOT CompSci C100			EL ENG 140	Linear Integrated Circuits	4
DEMOG 110	Introduction to Population Analysis	3	EL ENG 142	Integrated Circuits for Communications	4
DEMOG C175	Economic Demography	4	EL ENG 143	Microfabrication Technology	4
EPS 101	Field Geology and Digital Mapping	4	EL ENG 144	Fundamental Algorithms for Systems Modeling, Analysis, and Optimization	4
EPS C129	Biometeorology	3	EL ENG C145B	Medical Imaging Signals and Systems	4
EPS 130	Strong Motion Seismology	3	EL ENG C145L	Introductory Electronic Transducers Laboratory	3
EPS C146	Geological Oceanography	4	EL ENG C145M	Introductory Microcomputer Interfacing Laboratory	3
EPS C162	Planetary Astrophysics	4	EL ENG C145O	Laboratory in the Mechanics of Organisms	3
EPS C180	Air Pollution	3	EL ENG 147	Introduction to Microelectromechanical Systems (MEMS)	3
EPS C181	Atmospheric Physics and Dynamics	3	EL ENG C149	Course Not Available	4
ECON 101A	Economic Theory--Micro	4	ENE,RES C100	Energy and Society	4
			ENE,RES 102	Quantitative Aspects of Global Environmental Problems	4

ENE,RES 175	Water and Development	4	ESPM 120	Soil Characteristics	3
ENE,RES C176	Climate Change Economics	4	ESPM 121	Development and Classification of Soils	3
ENGIN 115	Engineering Thermodynamics	4	ESPM C126	Animal Behavior	4
ENGIN 117	Methods of Engineering Analysis	3	ESPM C128	Chemistry of Soils	3
Only one from the following may be used in an applied cluster for the Statistics major:			ESPM C129	Biometeorology	3
ENGIN 120	Principles of Engineering Economics		ESPM 131	Soil Microbial Ecology	3
ECON 136	Financial Economics		ESPM 132	Spider Biology	4
UGBA 103	Introduction to Finance		ESPM C138	Introduction to Comparative Virology	4
ENVECON C101	Environmental Economics	4	ESPM 140	General Entomology	4
ENVECON C102	Natural Resource Economics	4	ESPM 142	Insect Behavior	3
ENVECON C115	Modeling and Management of Biological Resources	4	ESPM 144	Insect Physiology	3
ENVECON 131	Globalization and the Natural Environment	3	ESPM C148	Pesticide Chemistry and Toxicology	3
ENVECON 140AC	Economics of Race, Agriculture, and the Environment	3	ESPM C149	Molecular Ecology	4
ENVECON 141	Agricultural and Environmental Policy	4	ESPM 152	Global Change Biology	3
ENVECON 142	Industrial Organization with Applications to Agriculture and Natural Resources	4	ESPM C159	Human Diet	4
ENVECON 143	Economics of Innovation and Intellectual Property	4	ESPM 165	International Rural Development Policy	4
ENVECON 145	Health and Environmental Economic Policy	4	ESPM 166	Natural Resource Policy and Indigenous Peoples	4
ENVECON 147	Regulation of Energy and the Environment	4	ESPM 172	Photogrammetry and Remote Sensing	3
ENVECON C151	Economic Development	4	ESPM 173	Introduction to Ecological Data Analysis	3
ENVECON 152	Advanced Topics in Development and International Trade	3	ESPM C177	GIS and Environmental Spatial Data Analysis	4
ENVECON 153	Population, Environment, and Development	3	ESPM C180	Air Pollution	3
ENVECON 154	Economics of Poverty and Technology	3	ESPM 181A	Fire Ecology	3
ENVECON 161	Advanced Topics in Environmental and Resource Economics	4	ESPM 182	Forest Operations Management	3
ENVECON 162	Economics of Water Resources	3	ESPM 183	Forest Ecosystem Management and Planning	4
ENVECON C175	The Economics of Climate Change	4	ESPM C183	Forest Ecosystem Management	4
ENVECON C176	Climate Change Economics	4	ESPM 185	Applied Forest Ecology	4
ENVECON C181	International Trade	4	ESPM 186	Management and Conservation of Rangeland Ecosystems	4
ENVECON C183	Forest Ecosystem Management	4	ESPM 187	Restoration Ecology	4
ENV SCI 100	Introduction to the Methods of Environmental Science	4	GEOG C139	Atmospheric Physics and Dynamics	3
ESPM 102A	Terrestrial Resource Ecology	4	GEOG 140A	Physical Landscapes: Process and Form	4
ESPM 102C	Resource Management	4	GEOG 142	Climate Dynamics	4
ESPM 102D	Climate and Energy Policy	4	GEOG 143	Global Change Biogeochemistry	3
ESPM C103	Principles of Conservation Biology	4	GEOG C145	Geological Oceanography	4
ESPM C104	Modeling and Management of Biological Resources	4	GEOG 148	Course Not Available	4
ESPM C107	Biology and Geomorphology of Tropical Islands	13	GEOG 187	Geographic Information Analysis	4
ESPM 108A	Trees: Taxonomy, Growth, and Structures	3	GEOG C188	Geographic Information Systems	4
ESPM 108B	Environmental Change Genetics	3	IND ENG 115	Industrial and Commercial Data Systems	3
ESPM 111	Ecosystem Ecology	4	IND ENG 130	Methods of Manufacturing Improvement	3
ESPM 112	Microbial Ecology	3	IND ENG 131	Course Not Available	
ESPM 114	Wildlife Ecology	3	IND ENG 142	Introduction to Machine Learning and Data Analytics	3
ESPM 115C	Fish Ecology	3	IND ENG 150	Production Systems Analysis	3
ESPM 116B	Rangeland Ecology	3	IND ENG 151	Service Operations Design and Analysis	3
ESPM 116C	Tropical Forest Ecology	3	IND ENG 153	Logistics Network Design and Supply Chain Management	3
ESPM 117	Urban Garden Ecosystems	4	IND ENG 160	Nonlinear and Discrete Optimization	3
ESPM 118	Agricultural Ecology	3	IND ENG 162	Linear Programming and Network Flows	3
			IND ENG 166	Decision Analytics	3
			IND ENG 170	Industrial Design and Human Factors	3
			IND ENG 171	Technology Firm Leadership	3
			IND ENG 221	Introduction to Financial Engineering	3
			IND ENG 222	Financial Engineering Systems I	3

NOT Ind Eng 165, Ind Eng 172 or Ind Eng 173			INTEGBI C155	Holocene Paleoecology: How Humans Changed the Earth	3
INFO 159	Natural Language Processing	3	INTEGBI C156	Principles of Conservation Biology	4
INFO 202	Information Organization and Retrieval	2	INTEGBI 157LF	Ecosystems of California	4
INFO 213	User Interface Design and Development	4	INTEGBI 158LF	Biology and Geomorphology of Tropical Islands	13
INFO 232	Applied Behavioral Economics for Information Systems	3	INTEGBI 160	Evolution	4
INFO 247	Information Visualization and Presentation	4	INTEGBI 161	Population and Evolutionary Genetics	4
INFO 253	Web Architecture	3	INTEGBI 162	Ecological Genetics	4
INFO 256	Applied Natural Language Processing	3	INTEGBI 164	Human Genetics and Genomics	4
INFO 271B	Quantitative Research Methods for Information Systems and Management	3	INTEGBI 166	Course Not Available	
INFO 272	Qualitative Research Methods for Information Systems and Management	3	INTEGBI 168L	Systematics of Vascular Plants with Laboratory	4
INTEGBI 102LF	Introduction to California Plant Life with Laboratory	4	INTEGBI 169	Evolutionary Medicine	4
INTEGBI 103LF	Invertebrate Zoology with Laboratory	5	INTEGBI 173LF	Mammalogy with Laboratory	5
INTEGBI 104LF	Natural History of the Vertebrates with Laboratory	5	INTEGBI 174LF	Ornithology with Laboratory	4
INTEGBI 106A	Physical and Chemical Environment of the Ocean	4	INTEGBI 175LF	Herpetology with Laboratory	4
INTEGBI C107L	Principles of Plant Morphology with Laboratory	4	INTEGBI 181L	Paleobotany - The 500-Million Year History of a Greening Planet	4
INTEGBI C109	Evolution and Ecology of Development	3	INTEGBI 183L	Evolution of the Vertebrates with Laboratory	4
INTEGBI C110L	Biology of Fungi with Laboratory	4	INTEGBI 184L	Morphology of the Vertebrate Skeleton with Laboratory	4
INTEGBI 113L	Paleobiological Perspectives on Ecology and Evolution	4	INTEGBI C185L	Human Paleontology	5
INTEGBI 115	Introduction to Systems in Biology and Medicine	4	INTEGBI C187	Human Biogeography of the Pacific	3
INTEGBI 117 & 117LF	Medical Ethnobotany and Medical Ethnobotany Laboratory	4	IAS C175	The Economics of Climate Change	4
INTEGBI 118	Host-Microbe Interactions	4	IAS C176	Climate Change Economics	4
INTEGBI 119	Evaluating Scientific Evidence in Medicine	3	LD ARCH 122	Hydrology for Planners	4
INTEGBI 123AL	Exercise and Environmental Physiology with Laboratory	5	LD ARCH C177	GIS and Environmental Spatial Data Analysis	4
INTEGBI C125L	Introduction to the Biomechanical Analysis of Human Movement	4	LD ARCH C188	Geographic Information Systems	4
INTEGBI 128	Sports Medicine	3	L & S C180U	Wealth and Poverty	4
INTEGBI C129L	Human Physiological Assessment	3	LINGUIS 100	Introduction to Linguistic Science	4
INTEGBI 131	General Human Anatomy	3	LINGUIS C105	Cognitive Linguistics	4
INTEGBI 132	Survey of Human Physiology	4	LINGUIS 110	Phonetics	4
INTEGBI 135	The Mechanics of Organisms	4	LINGUIS 113	Experimental Phonetics	3
INTEGBI C135L	Laboratory in the Mechanics of Organisms	3	LINGUIS 140	Field Methods	3
INTEGBI 137	Human Endocrinology	4	LINGUIS C146	Language Acquisition	3
INTEGBI 138	Comparative Endocrinology	4	LINGUIS C147	Language Disorders	3
INTEGBI 139	The Neurobiology of Stress	4	LINGUIS C160	Quantitative Methods in Linguistics	4
INTEGBI 140	Biology of Human Reproduction	4	MATH C103	Introduction to Mathematical Economics	4
INTEGBI C142L	Introduction to Human Osteology	6	MATH 104	Introduction to Analysis	4
INTEGBI C143A	Biological Clocks: Physiology and Behavior	3	MATH H104	Honors Introduction to Analysis	4
INTEGBI C143B	Hormones and Behavior	3	MATH 105	Second Course in Analysis	4
INTEGBI C144	Animal Behavior	4	MATH 110	Linear Algebra	4
INTEGBI 146LF	Behavioral Ecology with Laboratory	5	MATH H110	Honors Linear Algebra	4
INTEGBI 148	Comparative Animal Physiology	3	MATH 113	Introduction to Abstract Algebra	4
INTEGBI C149	Molecular Ecology	4	MATH H113	Honors Introduction to Abstract Algebra	4
INTEGBI 151	Plant Physiological Ecology	4	MATH 114	Second Course in Abstract Algebra	4
INTEGBI 152	Environmental Toxicology	4	MATH 115	Introduction to Number Theory	4
INTEGBI 153	Ecology	3	MATH 116	Cryptography	4
INTEGBI 154	Plant Ecology	3	MATH 118	Fourier Analysis, Wavelets, and Signal Processing	4
			MATH 121A	Mathematical Tools for the Physical Sciences	4
			MATH 121B	Mathematical Tools for the Physical Sciences	4
			MATH 123	Ordinary Differential Equations	4
			MATH 125A	Mathematical Logic	4
			MATH 126	Introduction to Partial Differential Equations	4

MATH 127	Mathematical and Computational Methods in Molecular Biology	4	MEC ENG 168	Mechanics of Offshore Systems	3
MATH 128A	Numerical Analysis	4	MEC ENG 170	Engineering Mechanics III	3
MATH 128B	Numerical Analysis	4	MEC ENG 173	Fundamentals of Acoustics	3
MATH 130	The Classical Geometries	4	MEC ENG 175	Intermediate Dynamics	3
MATH 135	Introduction to the Theory of Sets	4	MEC ENG C176	Orthopedic Biomechanics	4
MATH 136	Incompleteness and Undecidability	4	MEC ENG C178	Designing for the Human Body	3
MATH 140	Metric Differential Geometry	4	MEC ENG C180	Engineering Analysis Using the Finite Element Method	3
MATH 141	Elementary Differential Topology	4	MEC ENG 185	Introduction to Continuum Mechanics	3
MATH 142	Elementary Algebraic Topology	4	MCELLBI 100B	Biochemistry: Pathways, Mechanisms, and Regulation	4
MATH 143	Elementary Algebraic Geometry	4	MCELLBI C100A	Biophysical Chemistry: Physical Principles and the Molecules of Life	4
MATH 170	Mathematical Methods for Optimization	4	MCELLBI 102	Survey of the Principles of Biochemistry and Molecular Biology	4
MATH 172	Combinatorics	4	MCELLBI C103	Bacterial Pathogenesis	3
MATH 185	Introduction to Complex Analysis	4	MCELLBI 104	Genetics, Genomics, and Cell Biology	4
MATH H185	Honors Introduction to Complex Analysis	4	MCELLBI 110	Molecular Biology: Macromolecular Synthesis and Cellular Function	4
MATH 189	Mathematical Methods in Classical and Quantum Mechanics	4	MCELLBI C110L	General Biochemistry and Molecular Biology Laboratory	4
MEC ENG 101	Introduction to Lean Manufacturing Systems	3	MCELLBI C112	General Microbiology	4
MEC ENG 102A	Introduction to Mechanical Systems for Mechatronics	4	MCELLBI C114	Introduction to Comparative Virology	4
MEC ENG 102B	Mechatronics Design	4	MCELLBI C116	Microbial Diversity	3
MEC ENG 104	Engineering Mechanics II	3	MCELLBI 130	Cell and Systems Biology	4
MEC ENG 106	Fluid Mechanics	3	MCELLBI 132	Biology of Human Cancer	4
MEC ENG 107	Mechanical Engineering Laboratory	3	MCELLBI 133L	Physiology and Cell Biology Laboratory	4
MEC ENG 108	Mechanical Behavior of Engineering Materials	4	MCELLBI C134	Chromosome Biology/Cytogenetics	3
MEC ENG 109	Heat Transfer	3	MCELLBI 135A	Topics in Cell and Developmental Biology: Molecular Endocrinology	3
MEC ENG 110	Introduction to Product Development	3	MCELLBI 136	Physiology	4
MEC ENG C115	Molecular Biomechanics and Mechanobiology of the Cell	4	MCELLBI 137L	Physical Biology of the Cell	3
MEC ENG C117	Structural Aspects of Biomaterials	4	MCELLBI 140	General Genetics	4
MEC ENG 118	Introduction to Nanotechnology and Nanoscience	3	MCELLBI 140L	Genetics Laboratory	4
MEC ENG 119	Introduction to MEMS (Microelectromechanical Systems)	3	MCELLBI 141	Developmental Biology	4
MEC ENG 120	Computational Biomechanics Across Multiple Scales	3	MCELLBI 143	Evolution of Genomes, Cells, and Development	3
MEC ENG 122	Processing of Materials in Manufacturing	3	MCELLBI C148	Microbial Genomics and Genetics	4
MEC ENG 130	Design of Planar Machinery	3	MCELLBI 149	The Human Genome	3
MEC ENG 131	Vehicle Dynamics and Control	3	MCELLBI 150	Molecular Immunology	4
MEC ENG 132	Dynamic Systems and Feedback	3	MCELLBI 150L	Immunology Laboratory	4
MEC ENG 133	Mechanical Vibrations	3	MCELLBI 160	Cellular and Molecular Neurobiology	4
MEC ENG C134	Feedback Control Systems	4	MCELLBI 160L	Neurobiology Laboratory	4
MEC ENG 135	Design of Microprocessor-Based Mechanical Systems	4	MCELLBI 161	Circuit, Systems and Behavioral Neuroscience	4
MEC ENG 138	Introduction to Micro/Nano Mechanical Systems Laboratory	3	MCELLBI 163L	Mammalian Neuroanatomy Lab	4
MEC ENG 140	Combustion Processes	3	MCELLBI 165	Neurobiology of Disease	3
MEC ENG 146	Energy Conversion Principles	3	MCELLBI 166	Biophysical Neurobiology	3
MEC ENG 150A	Solar-Powered Vehicles: Analysis, Design and Fabrication	3	MUSIC 108	Music Perception and Cognition	4
MEC ENG 151	Advanced Heat Transfer	3	MUSIC 108M	Music Perception and Cognition	4
MEC ENG 163	Engineering Aerodynamics	3	MUSIC 109	Music Cognition: The Mind Behind the Musical Ear	3
MEC ENG 164	Marine Statics and Structures	3	MUSIC 109M	Music Cognition: The Mind Behind the Musical Ear	3
MEC ENG 165	Ocean-Environment Mechanics	3	NEUROSC C129	Course Not Available	3
MEC ENG 167	Microscale Fluid Mechanics	3	NUC ENG 100	Introduction to Nuclear Engineering	3
			NUC ENG 130	Analytical Methods for Non-proliferation	4

NUC ENG 175	Methods of Risk Analysis	3	PLANTBI 185	Techniques in Light Microscopy	3
NUSCTX 103	Nutrient Function and Metabolism	3	PLANTBI 190	Special Topics in Plant and Microbial Biology (only when taken for 3-4 units)	3-4
NUSCTX 110	Toxicology	4	POL SCI C131A	Applied Econometrics and Public Policy	4
NUSCTX C114	Pesticide Chemistry and Toxicology	3	POL SCI 133	Selected Topics in Quantitative Methods	4
NUSCTX 121	Computational Toxicology	3	PSYCH 110	Introduction to Biological Psychology	3
NUSCTX C159	Human Diet	4	PSYCH C113	Biological Clocks: Physiology and Behavior	3
PHILOS 128	Philosophy of Science	4	PSYCH 114	Biology of Learning	3
PHILOS 140A	Intermediate Logic	4	PSYCH C116	Hormones and Behavior	3
PHILOS 140B	Intermediate Logic	4	PSYCH 117	Human Neuropsychology	3
PHILOS 142	Philosophical Logic	4	PSYCH C120	Basic Issues in Cognition	3
PHILOS 143	Modal Logic	4	PSYCH 121	Animal Cognition	3
PHILOS 146	Philosophy of Mathematics	4	PSYCH 122	Introduction to Human Learning and Memory	3
PHYS ED C129	Human Physiological Assessment	3	PSYCH 125	The Developing Brain	3
PHYS ED C165	Introduction to the Biomechanical Analysis of Human Movement	4	PSYCH C126	Perception	3
PHYSICS 105	Analytic Mechanics	4	PSYCH C127	Cognitive Neuroscience	3
PHYSICS 110A	Electromagnetism and Optics	4	PSYCH C129	Scientific Approaches to Consciousness	3
PHYSICS 110B	Electromagnetism and Optics	4	PSYCH 130	Clinical Psychology	3
PHYSICS 111A	Instrumentation Laboratory	3	PSYCH 131	Developmental Psychopathology	3
PHYSICS 111B	Advanced Experimentation Laboratory (only when taken for 3 units)	3	PSYCH 133	Psychology of Sleep	3
PHYSICS 112	Introduction to Statistical and Thermal Physics	4	PSYCH 140	Developmental Psychology	3
PHYSICS 129	Particle Physics	4	PSYCH 141	Development During Infancy	3
PHYSICS 130	Quantum and Nonlinear Optics	3	PSYCH C143	Language Acquisition	3
PHYSICS 137A	Quantum Mechanics	4	PSYCH 150	Psychology of Personality	3
PHYSICS 137B	Quantum Mechanics	4	PSYCH 164	Social Cognition	3
PHYSICS 138	Modern Atomic Physics	3	PB HLTH C102	Bacterial Pathogenesis	3
PHYSICS 139	Special Relativity and General Relativity	3	PB HLTH 112	Global Health: A Multidisciplinary Examination	4
PHYSICS 141A	Solid State Physics	4	PB HLTH 126	Health Economics and Public Policy	3
PHYSICS 141B	Solid State Physics	3	PB HLTH C129	Course Not Available	
PHYSICS 142	Introduction to Plasma Physics	4	PB HLTH 150A	Introduction to Epidemiology and Human Disease	4
PHYSICS 151	Elective Physics: Special Topics	3	PB HLTH 150B	Introduction to Environmental Health Sciences	3
PHYSICS C161	Relativistic Astrophysics and Cosmology	4	PB HLTH 162A	Public Health Microbiology	3
PHYSICS 177	Principles of Molecular Biophysics	3	PB HLTH 170B	Course Not Available	3
PLANTBI 101L	Experimental Plant Biology Laboratory	3	PB HLTH 250A	Epidemiologic Methods I	3
PLANTBI C103	Bacterial Pathogenesis	3	PB HLTH 252B	Modeling the Dynamics of Infectious Disease Processes (only when taken for 3-4 units)	3-4
PLANTBI C107L	Principles of Plant Morphology with Laboratory	4	NOT Pb Hlth 141, 142, 142AB, W142, or 145		
PLANTBI C109	Evolution and Ecology of Development	3	PUB POL 101	Introduction to Public Policy Analysis	4
PLANTBI C110L	Biology of Fungi with Laboratory	4	PUB POL C103	Wealth and Poverty	4
PLANTBI C112	General Microbiology	4	PUB POL C142	Applied Econometrics and Public Policy	4
PLANTBI 113	California Mushrooms	3	PUB POL C184	Energy and Society	4
PLANTBI C114	Introduction to Comparative Virology	4	RHETOR 107	Rhetoric of Scientific Discourse	4
PLANTBI C116	Microbial Diversity	3	RHETOR 170	Rhetoric of Social Science	4
PLANTBI 120 & 120L	Biology of Algae and Laboratory for Biology of Algae	4	SOCIOLOG 105	Research Design and Sociological Methods	5
PLANTBI C124	The Berkeley Lectures on Energy: Energy from Biomass	3	SOCIOLOG 106	Quantitative Sociological Methods	4
PLANTBI C134	Chromosome Biology/Cytogenetics	3	SOCIOLOG 108	Advanced Methods: In-depth Interviewing	4
PLANTBI 135	Physiology and Biochemistry of Plants	3	UGBA 101A	Microeconomic Analysis for Business Decisions	3
PLANTBI C148	Microbial Genomics and Genetics	4	UGBA 101B	Macroeconomic Analysis for Business Decisions	3
PLANTBI 150	Plant Cell Biology	3	UGBA 102A	Introduction to Financial Accounting	3
PLANTBI 160	Plant Molecular Genetics	3	UGBA 102B	Introduction to Managerial Accounting	3
PLANTBI 165	Plant-Microbe Interactions	3	Only one from the following may be used in an applied cluster for the Statistics major:		
			UGBA 103	Introduction to Finance	

ECON 136	Financial Economics	
ENGIN 120	Principles of Engineering Economics	
UGBA 106	Marketing	3
UGBA 118	International Trade	3
UGBA 119	Leading Strategy Implementation	3
UGBA 120AA	Intermediate Financial Accounting 1	4
UGBA 120AB	Intermediate Financial Accounting 2	4
UGBA 120B	Advanced Financial Accounting	4
UGBA 122	Financial Information Analysis	4
UGBA 126	Auditing	4
UGBA 131	Corporate Finance and Financial Statement Analysis	3
UGBA 132	Financial Institutions and Markets	3
UGBA 133	Investments	3
UGBA 136F	Behavioral Finance	3
UGBA 141	Production and Operations Management	3
UGBA 160	Consumer Behavior	3
UGBA 161	Marketing Research: Data and Analytics	3
UGBA 162	Brand Management and Strategy	3
UGBA 165	Advertising Strategy	3
UGBA 169	Pricing	3
UGBA 180	Introduction to Real Estate and Urban Land Economics	3
UGBA 183	Introduction to Real Estate Finance	3
UGBA 184	Urban and Real Estate Economics	3

Students who have a strong interest in an area of study outside their major often decide to complete a minor program. These programs have set requirements and are noted officially on the transcript in the memoranda section, but they are not noted on diplomas.

General Guidelines

1. All courses taken to fulfill the minor requirements below must be taken for graded credit.
2. A minimum of three of the upper division courses taken to fulfill the minor requirements must be completed at UC Berkeley.
3. A minimum grade point average (GPA) of 2.0 is required for courses used to fulfill the minor requirements.
4. Courses used to fulfill the minor requirements may be applied toward the Seven-Course Breadth requirement, for Letters & Science students.
5. No more than one upper division course may be used to simultaneously fulfill requirements for a student's major and minor programs.
6. All minor requirements must be completed prior to the last day of finals during the semester in which the student plans to graduate. Students who cannot finish all courses required for the minor by that time should see a College of Letters & Science adviser.
7. All minor requirements must be completed within the unit ceiling. (For further information regarding the unit ceiling, please see the College Requirements tab.)

Requirements

Lower Division Prerequisites

MATH 1A	Calculus	4
---------	----------	---

MATH 1B	Calculus	4
MATH 53	Multivariable Calculus	4
MATH 54	Linear Algebra and Differential Equations	4

Upper Division Requirements

STAT 134	Concepts of Probability	4
or STAT 140	Probability for Data Science	
STAT 135	Concepts of Statistics	4

Select three statistics electives from the following; at least one of the selections must have a lab:

STAT 150	Stochastic Processes
STAT 151A	Linear Modelling: Theory and Applications (LAB COURSE)
STAT 152	Sampling Surveys (LAB COURSE)
STAT 153	Introduction to Time Series (LAB COURSE)
STAT 154	Modern Statistical Prediction and Machine Learning (LAB COURSE)
STAT 155	Game Theory
STAT 157	Seminar on Topics in Probability and Statistics
STAT 158	The Design and Analysis of Experiments (LAB COURSE)
STAT 159	Reproducible and Collaborative Statistical Data Science (LAB COURSE)

Undergraduate students in the College of Letters & Science must fulfill the following requirements in addition to those required by their major program.

For detailed lists of courses that fulfill college requirements, please review the College of Letters & Sciences (<http://guide.berkeley.edu/archive/2017-18/undergraduate/colleges-schools/letters-science>) page in this Guide.

Entry Level Writing (<http://writing.berkeley.edu/node/78>)

All students who will enter the University of California as freshmen must demonstrate their command of the English language by fulfilling the Entry Level Writing requirement. Fulfillment of this requirement is also a prerequisite to enrollment in all reading and composition courses at UC Berkeley.

American History and American Institutions (<http://guide.berkeley.edu/archive/2017-18/undergraduate/colleges-schools/letters-science/american-history-institutions-requirement>)

The American History and Institutions requirements are based on the principle that a US resident graduated from an American university, should have an understanding of the history and governmental institutions of the United States.

American Cultures (<http://americancultures.berkeley.edu/students/courses>)

American Cultures is the one requirement that all undergraduate students at Cal need to take and pass in order to graduate. The requirement offers an exciting intellectual environment centered on the study of race, ethnicity and culture of the United States. AC courses offer students

opportunities to be part of research-led, highly accomplished teaching environments, grappling with the complexity of American Culture.

Quantitative Reasoning

The Quantitative Reasoning requirement is designed to ensure that students graduate with basic understanding and competency in math, statistics, or computer science. The requirement may be satisfied by exam or by taking an approved course.

Foreign Language

The Foreign Language requirement may be satisfied by demonstrating proficiency in reading comprehension, writing, and conversation in a foreign language equivalent to the second semester college level, either by passing an exam or by completing approved course work.

Reading and Composition

In order to provide a solid foundation in reading, writing, and critical thinking the College requires two semesters of lower division work in composition in sequence. Students must complete a first-level reading and composition course by the end of their second semester and a second-level course by the end of their fourth semester.

Breadth Requirements

The undergraduate breadth requirements provide Berkeley students with a rich and varied educational experience outside of their major program. As the foundation of a liberal arts education, breadth courses give students a view into the intellectual life of the University while introducing them to a multitude of perspectives and approaches to research and scholarship. Engaging students in new disciplines and with peers from other majors, the breadth experience strengthens interdisciplinary connections and context that prepares Berkeley graduates to understand and solve the complex issues of their day.

Unit Requirements

- 120 total units, including at least 60 L&S units
- Of the 120 units, 36 must be upper division units
- Of the 36 upper division units, 6 must be taken in courses offered outside your major department

Residence Requirements

For units to be considered in "residence," you must be registered in courses on the Berkeley campus as a student in the College of Letters & Science. Most students automatically fulfill the residence requirement by attending classes here for four years. In general, there is no need to be concerned about this requirement, unless you go abroad for a semester or year or want to take courses at another institution or through UC Extension during your senior year. In these cases, you should make an appointment to meet an adviser to determine how you can meet the Senior Residence Requirement.

Note: Courses taken through UC Extension do not count toward residence.

Senior Residence Requirement

After you become a senior (with 90 semester units earned toward your BA degree), you must complete at least 24 of the remaining 30 units in residence in at least two semesters. To count as residence, a semester

must consist of at least 6 passed units. Intercampus Visitor, EAP, and UC Berkeley-Washington Program (UCDC) units are excluded.

You may use a Berkeley Summer Session to satisfy one semester of the Senior Residence requirement, provided that you successfully complete 6 units of course work in the Summer Session and that you have been enrolled previously in the college.

Modified Senior Residence Requirement

Participants in the UC Education Abroad Program (EAP) or the UC Berkeley Washington Program (UCDC) may meet a Modified Senior Residence requirement by completing 24 (excluding EAP) of their final 60 semester units in residence. At least 12 of these 24 units must be completed after you have completed 90 units.

Upper Division Residence Requirement

You must complete in residence a minimum of 18 units of upper division courses (excluding EAP units), 12 of which must satisfy the requirements for your major.

Mission

Statisticians help to design data collection plans, analyze data appropriately, and interpret and draw conclusions from those analyses. The central objective of the undergraduate major in Statistics is to equip students with consequently requisite quantitative skills that they can employ and build on in flexible ways.

Learning Goals for the Major

Majors are expected to learn concepts and tools for working with data and have experience in analyzing real data that goes beyond the content of a service course in statistical methods for non-majors. Majors should understand the following:

1. The fundamentals of probability theory
2. Statistical reasoning and inferential methods
3. Statistical computing
4. Statistical modeling and its limitations

Skills

Graduates should also have skills in the following:

1. Description, interpretation, and exploratory analysis of data by graphical and other means
2. Effective communication

Statistics

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 2018, Summer 2018 8 Week Session, Spring 2018

Population and variables. Standard measures of location, spread and association. Normal approximation. Regression. Probability and sampling. Binomial distribution. Interval estimation. Some standard significance tests.

Introduction to Statistics: [Read More](#) [+]

Rules & Requirements

Credit Restrictions: Students who have taken 2X, 5, 20, 21, 21X, or 25 will receive no credit for 2.

Hours & Format

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

Summer: 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 2018, Summer 2018 8 Week Session, Spring 2018, Fall 2017

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)

Hours & Format

Fall and/or spring: 15 weeks - 3-3 hours of lecture and 2-2 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.

Also listed as: COMPSCI C8/INFO C8

Foundations of Data Science: [Read Less](#) [-]

STAT C8R Introduction to Computational Thinking with Data 3 Units

Terms offered: Prior to 2007

An introduction to computational thinking and quantitative reasoning, preparing students for further coursework, especially Foundations of Data Science (CS/Info/Stat C8). Emphasizes the use of computation to gain insight about quantitative problems with real data. Expressions, data types, collections, and tables in Python. Programming practices, abstraction, and iteration. Visualizing univariate and bivariate data with bar charts, histograms, plots, and maps. Introduction to statistical concepts including averages and distributions, predicting one variable from another, association and causality, probability and probabilistic simulation. Relationship between numerical functions and graphs. Sampling and introduction to inference.

Introduction to Computational Thinking with Data: Read More [\[+\]](#)

Objectives Outcomes

Course Objectives: C8R also includes quantitative reasoning concepts that aren't covered in Data 8. These include certain topics in: principles of data visualization; simulation of random processes; and understanding numerical functions through their graphs. This will help prepare students for computational and quantitative courses other than Data 8. C8R takes advantage of the complementarity of computing and quantitative reasoning to enliven abstract ideas and build students' confidence in their ability to solve real problems with quantitative tools. Students learn computer science concepts and immediately apply them to plot functions, visualize data, and simulate random events.

Foundations of Data Science (CS/Info/Stat C8, a.k.a. Data 8) is an increasingly popular class for entering students at Berkeley. Data 8 builds students' computing skills in the first month of the semester, and students rely on these skills as the course progresses. For some students, particularly those with little prior exposure to computing, developing these skills benefits from further time and practice. C8R is a rapid introduction to Python programming, visualization, and data analysis, which will prepare students for success in Data 8.

Student Learning Outcomes: Students will be able to perform basic computations in Python, including working with tabular data. Students will be able to understand basic probabilistic simulations. Students will be able to understand the syntactic structure of Python code. Students will be able to use good practices in Python programming. Students will be able to use visualizations to understand univariate data and to identify associations or causal relationships in bivariate data.

Rules & Requirements

Credit Restrictions: Students who have taken COMPSCI/INFO/STAT C8 will receive no credit for COMPSCI/STAT C8R.

Hours & Format

Summer: 6 weeks - 4 hours of lecture, 2 hours of discussion, and 4 hours of laboratory per week

Additional Details

Subject/Course Level: Statistics/Undergraduate

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

Instructor: Adhikari

Also listed as: COMPSCI C8R

Introduction to Computational Thinking with Data: Read Less [\[-\]](#)

STAT 20 Introduction to Probability and Statistics 4 Units

Terms offered: Fall 2018, Summer 2018 8 Week Session, Spring 2018
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: One semester of calculus

Credit Restrictions: Students who have taken 2, 2X, 5, 21, 21X, or 25 will receive no credit for 20.

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: Fall 2016, Fall 2015, Fall 2014

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 Statistics 21 after completing Statistics 2, 2X, 5, 20, 21X, N21, W21 or 25. A deficiency in Statistics 21 may be moved by taking W21.

Hours & Format

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

Summer: 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.

Introductory Probability and Statistics for Business: Read Less [\[-\]](#)

STAT W21 Introductory Probability and Statistics for Business 4 Units

Terms offered: Summer 2018 8 Week Session, Spring 2018, Summer 2017 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 may be 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: Fall 2016, Fall 2003, Spring 2001

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. 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 28 Statistical Methods for Data Science 4 Units

Terms offered: Spring 2018, Spring 2017

This is a lower-division course that is a follow-up to STAT8/CS8 (Foundations of Data Science). The course will teach a broad range of statistical methods that are used to solve data problems. Topics will include group comparisons and ANOVA, standard parametric statistical models, multivariate data visualization, multiple linear regression and classification, classification and regression trees and random forests. An important focus of the course will be on statistical computing and reproducible statistical analysis. The students will be introduced to the widely used R statistical language and they will obtain hands-on experience in implementing a range of commonly used statistical methods on numerous real world datasets.

Statistical Methods for Data Science: Read More [+]

Rules & Requirements

Prerequisites: Statistics/Information/Computer Science C8 is the only course prerequisite. In addition, mathematical fluency and comfort at the level of precalculus (Math 32) is expected

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.

Statistical Methods for Data Science: 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; evaluating 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 88 Probability and Mathematical Statistics in Data Science 2 Units

Terms offered: Fall 2018, Spring 2018, Fall 2017

In this connector course we will state precisely and prove results discovered in the foundational data science course through working with data. Topics include: total variation distance between discrete distributions; the mean, standard deviation, and tail bounds; correlation, and the derivation of the regression equation; probabilities, random variables, and the Central Limit Theorem; probabilistic models; symmetries in random permutations; prior and posterior distributions, and Bayes' rule.

Probability and Mathematical Statistics in Data Science: [Read More](#) [+]

Rules & Requirements

Prerequisites: One semester of calculus. This course is meant to be taken concurrently with Computer Science C8/Statistics C8/Information C8. Students may take more than one 88 (data science connector) course if they wish, ideally concurrent with or after having taken the C8 course

Credit Restrictions: May not be taken for credit by students who have completed STAT 134, 140, or 135.

Hours & Format

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

Additional Details

Subject/Course Level: Statistics/Undergraduate

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

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

STAT 89A Linear Algebra for Data Science 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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 probability 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. 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 2014, Fall 2013, Spring 2013

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 2018, Spring 2018, Fall 2017

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: Computer Science/Information/Statistics C8 or Engineering 7; and either Computer Science 61A or Computer Science 88. Corequisite: Mathematics 54 or Electrical Engineering 16A

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.

Also listed as: COMPSCI C100

Principles & Techniques of Data Science: Read Less [\[-\]](#)

STAT 131A Introduction to Probability and Statistics for Life Scientists 4 Units

Terms offered: Fall 2018, Spring 2018, Fall 2017

Ideas for estimation and hypothesis testing basic to applications, including an introduction to probability. Linear estimation and normal regression theory.

Introduction to Probability and Statistics for Life Scientists: Read More [\[+\]](#)

Rules & Requirements

Prerequisites: One semester of calculus or consent of instructor

Hours & Format

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

Summer: 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 Probability and Statistics for Life Scientists: Read Less [\[-\]](#)

STAT 133 Concepts in Computing with Data 3 Units

Terms offered: Fall 2018, Spring 2018, Fall 2017

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.

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 2018, Summer 2018 8 Week Session, Spring 2018

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 2018, Summer 2018 8 Week Session, Spring 2018

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, ELEN 16A, STAT 89A, MATH 110 or equivalent linear algebra. Strongly recommended corequisite: 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 140 Probability for Data Science 4 Units

Terms offered: Fall 2018, Spring 2018, Spring 2017

An introduction to probability, emphasizing the combined use of mathematics and programming to solve problems. Random variables, discrete and continuous families of distributions. Bounds and approximations. Dependence, conditioning, Bayes methods. Convergence, Markov chains. Least squares prediction. Random permutations, symmetry, order statistics. Use of numerical computation, graphics, simulation, and computer algebra. Probability for Data Science: Read More [+]

Objectives Outcomes

Course Objectives: The emphasis on simulation and the bootstrap in Data 8 gives students a concrete sense of randomness and sampling variability. Stat 140 will capitalize on this, abstraction and computation complementing each other throughout.

The syllabus has been designed to maintain a mathematical level at least equal to that in Stat 134. So Stat 140 will start faster than Stat 134 (due to the Data 8 prerequisite), avoid approximations that are unnecessary when SciPy is at hand, and replace some of the routine calculus by symbolic math done in SymPy. This will create time for a unit on the convergence and reversibility of Markov Chains as well as added focus on conditioning and Bayes methods.

With about a thousand students a year taking Foundations of Data Science (Stat/CS/Info C8, a.k.a. Data 8), there is considerable demand for follow-on courses that build on the skills acquired in that class. Stat 140 is a probability course for Data 8 graduates who have also had a year of calculus and wish to go deeper into data science.

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: Statistics/Computer Science/Information C8 and one year of calculus at the level of Mathematics 1A-1B or higher. Corequisite: Mathematics 54, Electrical Engineering 16A, Statistics 89A, Mathematics 110 or equivalent linear algebra

Credit Restrictions: Students who have earned credit for Stat 134 will not receive credit for Stat 140.

Hours & Format

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

Additional Details

Subject/Course Level: Statistics/Undergraduate

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

Probability for Data Science: Read Less [-]

STAT 150 Stochastic Processes 3 Units

Terms offered: Fall 2018, Spring 2018, Fall 2017

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 2018, Spring 2018, Fall 2017

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.

Linear Modelling: Theory and Applications: Read More [+]

Rules & Requirements

Prerequisites: 102 or 135. 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 2018, Spring 2017, Spring 2016

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 2018, Spring 2018, Fall 2017

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.

Introduction to Time Series: Read More [+]

Rules & Requirements

Prerequisites: 101, 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 2018, Spring 2018, Fall 2017

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.

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 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 2018, Summer 2018 8 Week Session, Spring 2018

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 157 Seminar on Topics in Probability and Statistics 3 Units

Terms offered: Fall 2017, Fall 2016, Spring 2016

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. Course may be repeated for credit when topic changes.

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 The Design and Analysis of Experiments 4 Units

Terms offered: Spring 2018, Spring 2016, Spring 2015

An introduction to the design and analysis of experiments. This course covers planning, conducting, and analyzing statistically designed experiments with an emphasis on hands-on experience. Standard designs studied include factorial designs, block designs, latin square designs, and repeated measures designs. Other topics covered include the principles of design, randomization, ANOVA, response surface methodology, and computer experiments.

The Design and Analysis of Experiments: Read More [+]

Rules & Requirements

Prerequisites: Statistics 134 and 135 or consent of instructor. Statistics 135 may be taken concurrently. Statistics 133 is 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.

The Design and Analysis of Experiments: Read Less [-]

STAT 159 Reproducible and Collaborative Statistical Data Science 4 Units

Terms offered: Fall 2018, Fall 2017, Fall 2016

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 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 1 - 3 Units

Terms offered: Spring 2017, Fall 2015, Summer 2015 10 Week Session

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

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 - 1-3 hours of fieldwork per week

Summer:

6 weeks - 3-8 hours of fieldwork per week

8 weeks - 2-6 hours of fieldwork per week

10 weeks - 1.5-4.5 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 198 Directed Study for Undergraduates 1 - 3 Units

Terms offered: Spring 2018, Spring 2016, Fall 2015

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: Spring 2017, Fall 2015, Spring 2015

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 [\[-\]](#)