

A.B. in Statistics - Applied Statistics Track (Effective Fall 2020)

This major is recommended for students who are interested in applications of statistical techniques to various disciplines, especially the social sciences.

Preparatory Subject Matter (20-23 units)

- ☐ MAT 16A-B-C or 17A-B-C or 21A-B-C (21 series preferred) (9-12)
- ☐ MAT 22A Linear Algebra (3)
- ☐ ECS 32A or 36A Programming (4)
- ☐ STA 13 or 32 or 100 Statistics (32 or 100 preferred) (4)

Depth Subject Matter (45-48 units)

Core Coursework

- ☐ STA 106 Analysis of Variance (4)
- ☐ STA 108 Regression Analysis (4)
- ☐ STA 130A Mathematical Statistics: Brief Course (4)
- ☐ STA 130B Mathematical Statistics: Brief Course (4)
- ☐ STA 138 Analysis of Categorical Data (4)
- ☐ STA 137 Applied Time Series Analysis *or* STA 141A Fundamentals of Statistical Data Science (4)

Restricted Electives

Choose three: (12)

- ☐ STA 104 Nonparametric Statistics (4)
- ☐ STA 135 Multivariate Data Analysis (4)
- ☐ STA 137 Applied Time Series Analysis (4)
- ☐ STA 141A Fundamentals of Statistical Data Science (4)
- ☐ STA 141B Data & Web Technologies for Data Analysis *or* STA 141C Big Data & High Performance Statistical Computing (4)
- ☐ STA 144 Sampling Theory of Surveys (4)
- ☐ STA 145 Bayesian Statistical Inference (4)
- ☐ STA 160 Practice in Statistical Data Science (4)
- ☐ MAT 168 Optimization (4)
- ☐ One approved 4 unit course from STA 199, 194HA, or 194HB (4)

Cluster Electives

Choose three upper division elective courses outside of Statistics.

(9-12)

- ☐ _____ (3-4)
- ☐ _____ (3-4)
- ☐ _____ (3-4)

A list of pre-approved elective courses can be found at <https://statistics.ucdavis.edu/undergrad/ab-applied-track/electives>.

Sample Schedule

Freshman	Fall	Winter	Spring
	MAT 16/17/21 A	MAT 16/17/21 B	MAT 16/17/21 C
		ECS 32A or 36A	STA 13 or 32 or 100
Sophomore	Fall	Winter	Spring
	MAT 022A	STA 108	STA 106
	Cluster Elective		Cluster Elective
Junior	Fall	Winter	Spring
	STA 130A	STA130B	STA 137 or 141A
		Cluster Elective	
Senior	Fall	Winter	Spring
	STA 138	STA/MAT 1XX	STA 1XX
		STA 1XX	

B.S. in Statistics - Applied Statistics Track (Effective Fall 2020)

This major is recommended for students who are interested in applications of statistical techniques to various disciplines including the biological, physical and social sciences.

Preparatory Subject Matter (27-31 units)

- ☐ MAT 16A-B-C or 17A-B-C or 21A-B-C (21 series preferred) (9-12)
- ☐ MAT 22A Linear Algebra (3)
- ☐ ECS 32A or 36A Programming (4)
- ☐ STA 13 or 32 or 100 Statistics (32 or 100 preferred) (4)

Cluster Elective Prerequisites

(7-8)

Two introductory courses serving as the prerequisites to the chosen Cluster Electives (see **Cluster Electives** section below).

- ☐ _____ (3-4)
- ☐ _____ (4)

Depth Subject Matter (48-52 units)

Core Coursework

- ☐ STA 106 Analysis of Variance (4)
- ☐ STA 108 Regression Analysis (4)
- ☐ STA 130A Mathematical Statistics: Brief Course (4)
- ☐ STA 130B Mathematical Statistics: Brief Course (4)
- ☐ STA 138 Analysis of Categorical Data (4)
- ☐ STA 141A Fundamentals of Statistical Data Science (4)

Restricted Electives

Choose three:

(12)

- ☐ STA 104 Nonparametric Statistics (4)
- ☐ STA 135 Multivariate Data Analysis (4)
- ☐ STA 137 Applied Time Series Analysis (4)
- ☐ STA 141B Data & Web Technologies for Data Analysis *or* STA 141C Big Data & High Performance Statistical Computing (4)
- ☐ STA 144 Sampling Theory of Surveys (4)
- ☐ STA 145 Bayesian Statistical Inference (4)
- ☐ STA 160 Practice in Statistical Data Science (4)
- ☐ MAT 168 Optimization (4)
- ☐ One approved 4 unit course from STA 199, 194HA, or 194HB (4)

Cluster Electives

Choose four upper division elective courses outside of Statistics.

(12-16)

- ☐ _____ (3-4)
- ☐ _____ (3-4)
- ☐ _____ (3-4)
- ☐ _____ (3-4)

A list of pre-approved elective courses can be found at <https://statistics.ucdavis.edu/undergrad/bs-applied-track/electives>.

Sample Schedule

Freshman	Fall	Winter	Spring
	MAT 16/17/21 A	MAT 16/17/21 B	MAT 16/17/21 C
		ECS 32A or 36A	STA 13 or 32 or 100
Sophomore	Fall	Winter	Spring
	MAT 022A	STA 108	STA 106
	Cluster Elective Prerequisite	Cluster Elective Prerequisite	
Junior	Fall	Winter	Spring
	STA 130A	STA 130B	STA 141A
	Cluster Elective	Cluster Elective	Cluster Elective
Senior	Fall	Winter	Spring
	STA 138	STA/MAT 1XX	STA 1XX
	Cluster Elective	STA 1XX	

B.S. in Statistics – Computational Statistics Track (Effective Fall 2020)

Recommended for students interested in the computational and data management aspects of statistical analysis.

Preparatory Subject Matter (27 units)

- ☐ MAT 21A-B-C Calculus (12)
- ☐ MAT 21D Vector Analysis (4)
- ☐ MAT 22A Linear Algebra (3)
- ☐ ECS 34 or 36C Programming (4)
- ☐ STA 13 or 32 or 100 Statistics (32 or 100 preferred) (4)

Depth Subject Matter (52 units)

Statistics

- ☐ STA 106 Analysis of Variance (4)
- ☐ STA 108 Regression Analysis (4)
- ☐ STA 131A Intro to Probability Theory (4)
- ☐ STA 131B Intro to Mathematical Statistics (4)
- ☐ STA 141A Fundamentals of Statistical Data Science (4)

Choose two: (8)

- ☐ STA 104 Applied Statistical Methods: Nonparametric Statistics (4)
- ☐ STA 135 Multivariate Data Analysis (4)
- ☐ STA 137 Applied Time Series Analysis (4)
- ☐ STA 138 Analysis of Categorical Data (4)
- ☐ STA 142A Statistical Learning I (4)
- ☐ STA 142B Statistical Learning II (4)
- ☐ STA 144 Sampling Theory of Surveys (4)
- ☐ STA 145 Bayesian Statistical Inference (4)
- ☐ STA 160 Practice in Statistical Data Science (4)
- ☐ One approved 4 unit course on STA 199, STA 194HA, or STA 194HB (4)

Programming, Data Management & Data Technologies (8)

- ☐ ECS 130 Scientific Computation or ECS 145 Scripting Languages & Their Applications (4)
- ☐ ECS 165A Database Systems (4)

Scientific Computational Algorithm & Visualization

Choose two: (8)

- ☐ ECS 122A Algorithm Design & Analysis (4)
- ☐ ECS 129 Computational Structural Bioinformatics (4)
- ☐ ECS 140A Programming Languages (4)
- ☐ ECS 158 Programming on Parallel Architectures (4)
- ☐ ECS 163 Information Interfaces (4)
- ☐ STA 141B Data & Web Technologies for Data Analysis (4)
- ☐ STA 141C Big Data & High Performance Statistical Computing (4)

Mathematics

Choose two: (8)

- ☐ MAT 124 Mathematical Biology (4)

- ☐ MAT 128A Numerical Analysis (4)
- ☐ MAT 128B Numerical Analysis in Solution of Equations (4)
- ☐ MAT 129 Fourier Analysis (4)
- ☐ MAT 145 Combinatorics (4)
- ☐ MAT 148 Discrete Mathematics (4)
- ☐ MAT 170 Mathematics for Data Analytics & Decision Making (4)
- ☐ MAT 165 Mathematics & Computers (4)
- ☐ MAT 167 Applied Linear Algebra (4)
- ☐ MAT 168 Optimization (4)

Sample Schedule

Freshman	Fall	Winter	Spring
	MAT 21A	MAT 21B	MAT 21C
			STA 13 or 32 or 100
Sophomore	Fall	Winter	Spring
	ECS 34 or 36C*	STA 108	STA 106
	MAT 21D	MAT 22A	
Junior	Fall	Winter	Spring
	STA 131A	STA 131B	STA 141C or ECS 1XX
	STA 141A	STA 141B or ECS 1XX	STA 1XX
Senior	Fall	Winter	Spring
	MAT 1XX	MAT 1XX	STA 1XX
	ECS 165A	ECS 130 or 145	

*The ECS 34 and 36C have multiple prerequisites that will also need to be taken. You will most likely take ECS 32A and 32B and 32C or ECS 36A and 36B and ECS 20 in your freshman year.

B.S. in Statistics - General Statistics Track (Effective Fall 2020)

Emphasizes statistical theory and is especially recommended as preparation for graduate study in statistics.

Preparatory Subject Matter (27-28 units)

- ☐ MAT 21A-B-C Calculus (12)
- ☐ MAT 21D Vector Analysis (4)
- ☐ MAT 22A or 67 Linear Algebra (3-4)
- ☐ ECS 32A or 36A Programming (4)
- ☐ STA 13 or 32 or 100 Statistics (32 or 100 preferred) (4)

Depth Subject Matter (55-56 units)

Core Coursework

Statistics

- ☐ STA 106 Analysis of Variance (4)
- ☐ STA 108 Regression Analysis (4)
- ☐ STA 131A Intro to Probability Theory (4)
- ☐ STA 131B Intro to Mathematical Statistics (4)
- ☐ STA 131C Intro to Mathematical Statistics (4)
- ☐ STA 138 Analysis of Categorical Data (4)

Mathematics

(16)

- ☐ MAT 108 Abstract Math *or* MAT 127C Real Analysis (4)
- ☐ MAT 127A Real Analysis (4)
- ☐ MAT 127B Real Analysis (4)
- ☐ MAT 167 Applied Linear Algebra (4)

Restricted Electives

Choose three:

(12)

- ☐ STA 104 Nonparametric Statistics (4)
- ☐ STA 135 Multivariate Data Analysis (4)
- ☐ STA 137 Applied Time Series Analysis (4)
- ☐ STA 141A Fundamentals of Statistical Data Science (4)
- ☐ STA 141B Data & Web Technologies for Data Analysis *or* STA 141C Big Data & High Performance Statistical Computing (4)
- ☐ STA 142A Statistical Learning I (4)
- ☐ STA 142B Statistical Learning II (4)
- ☐ STA 144 Sampling Theory of Surveys (4)
- ☐ STA 145 Bayesian Statistical Inference (4)
- ☐ STA 160 Practice in Statistical Data Science (4)
- ☐ MAT 168 Optimization (4)
- ☐ One approved 4 unit course from STA 199, 194HA, or 194HB (4)

Related Elective Course

(3-4)

One upper division course approved by faculty advisor. A list of pre-approved electives can be found at <https://statistics.ucdavis.edu/undergrad/bs-general-track/electives>.

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Sample Schedule

Freshman	Fall	Winter	Spring
	MAT 21A	MAT 21B	MAT 21C
		ECS 32A or 36A	STA 13 or 32 or 100
Sophomore	Fall	Winter	Spring
	MAT 22A or 67	STA 108	MAT 108*
	MAT 21D		STA 106
Junior	Fall	Winter	Spring
	STA 131A	STA 131B	STA 131C
	MAT 127A	MAT 127B	MAT 127C*
Senior	Fall	Winter	Spring
	STA 138	STA/MAT 1XX	Approved Elective
	MAT 167	STA 1XX	STA 1XX

*Choose 1 of: MAT 108 and 127C

B.S. in Statistics – Machine Learning Track (Effective Fall 2020)

This track emphasizes algorithmic and theoretical aspects of statistical learning methodologies that are geared towards building predictive and explanatory models for large and complex data. It is recommended for students interested in pursuing graduate programs in statistics, machine learning, or data science, as well as for students interested in learning statistical techniques for industry.

Preparatory Subject Matter (27 units)

- ☐ MAT 21A-B-C Calculus (12)
- ☐ MAT 21D Vector Analysis (4)
- ☐ MAT 22A Linear Algebra (3)
- ☐ ECS 32A or 36A Programming (4)
- (Note: Additional coursework in Python is strongly recommended (e.g. ECS 32B))
- ☐ STA 13 or 32 or 100 Statistics (32 or 100 preferred) (4)

Depth Subject Matter (52 units)

Core Coursework

Statistics

- ☐ STA 106 Analysis of Variance (4)
- ☐ STA 108 Regression Analysis (4)
- ☐ STA 131A Intro to Probability Theory (4)
- ☐ STA 131B Intro to Mathematical Statistics (4)
- ☐ STA 131C Intro to Mathematical Statistics (4)
- ☐ STA 141A Fundamentals of Statistical Data Science (4)
- ☐ STA 142A Statistical Learning I (4)
- ☐ STA 142B Statistical Learning II (4)
- ☐ STA 144 Sampling Theory of Surveys or STA 145 Bayesian Statistical Inference (4)

Mathematics

- ☐ MAT 167 Applied Linear Algebra or MAT 168 Optimization (4)

Restricted Electives

Choose three: (12)

- ☐ STA 104 Applied Statistical Methods: Nonparametric Statistics (4)
- ☐ STA 135 Multivariate Data Analysis (4)
- ☐ STA 137 Applied Time Series Analysis (4)
- ☐ STA 138 Analysis of Categorical Data (4)
- ☐ STA 141B Data & Web Technologies for Data Analysis (4)
- ☐ STA 141C Big Data & High Performance Statistical Computing (4)
- ☐ STA 144 Sampling Theory of Surveys* (4)
- ☐ STA 145 Bayesian Statistical Inference* (4)
- ☐ One approved 4 unit course from STA 199, 194HA, or 194HB (4)
- ☐ MAT 127A Real Analysis (4)
- ☐ MAT 128A Numerical Analysis (4)
- ☐ MAT 170 Mathematics for Data Analytics & Decision Making (4)
- ☐ ECS 122A Algorithm Design & Analysis (4)
- ☐ ECS 158 Programming on Parallel Architectures (4)
- ☐ ECS 163 Information Interfaces (4)

- ☐ ECS 160 Software Engineering (4)
- ☐ ECS 170 Introduction to Artificial Intelligence (4)
- ☐ ECS 174 Computer Vision (4)

*Note: A course used to fulfill the core requirement cannot be used as an elective.

Sample Schedule

Freshman	Fall	Winter	Spring
	MAT 21A	MAT 21B	MAT 21C
		ECS 32A or 36A	STA 13 or 32 or 100
Sophomore	Fall	Winter	Spring
	MAT 22A	STA 108	STA 141A
	MAT 21D	ECS 32B*	STA 106
Junior	Fall	Winter	Spring
	STA 131A	STA 131B	STA 131C
	MAT 167 or 168	STA 142A	STA 142B
Senior	Fall	Winter	Spring
	STA/MAT/ECS 1XX	STA/MAT/ECS 1XX	STA 144 or 145
		STA/MAT/ECS 1XX	

*Recommended Course (not required)

B.S. in Statistics – Statistical Data Science Track (Effective Fall 2020)

This track emphasizes data handling skills and statistical computation. It is recommended for students interested in statistical learning methodology, advanced data handling techniques and computational aspects of statistical analysis.

Preparatory Subject Matter (27 units)

- ☐ MAT 21A-B-C Calculus (12)
 - ☐ MAT 21D Vector Analysis (4)
 - ☐ MAT 22A Linear Algebra (3)
 - ☐ ECS 32A or 36A Programming (4)
- (Note: Additional coursework in Python is strongly recommended (e.g. ECS 32B))
- ☐ STA 13 or 32 or 100 Statistics (32 or 100 preferred) (4)

Depth Subject Matter (52 units)

Core Coursework

Statistics

- ☐ STA 106 Analysis of Variance (4)
- ☐ STA 108 Regression Analysis (4)
- ☐ STA 131A Intro to Probability Theory *or* STA 130A Mathematical Statistics: Brief Course (4)
- ☐ STA 131B Intro to Mathematical Statistics *or* STA 130B Mathematical Statistics: Brief Course (4)
- ☐ STA 135 Multivariate Data Analysis (4)
- ☐ STA 141A Fundamentals of Statistical Data Science (4)
- ☐ STA 141B Data & Web Technologies for Data Analysis (4)
- ☐ STA 141C Big Data & High Performance Statistical Computing (4)
- ☐ STA 160 Practice in Statistical Data Science (4)

Machine Learning

- ☐ STA 142A Statistical Learning I or ECS 171 Machine Learning (4)

Mathematics

- ☐ MAT 167 Applied Linear Algebra or MAT 168 Optimization (4)

Restricted Electives

Choose two: (8)

- ☐ STA 104 Applied Statistical Methods: Nonparametric Statistics (4)
- ☐ STA 137 Applied Time Series Analysis (4)
- ☐ STA 138 Analysis of Categorical Data (4)
- ☐ STA 142A Statistical Learning I* (4)
- ☐ STA 142B Statistical Learning II (4)
- ☐ STA 144 Sampling Theory of Surveys (4)
- ☐ STA 145 Bayesian Statistical Inference (4)
- ☐ One approved 4 unit course from STA 199, 194HA, or 194HB (4)
- ☐ MAT 128A Numerical Analysis (4)
- ☐ MAT 170 Mathematics for Data Analytics & Decision Making (4)
- ☐ ECS 122A Algorithm Design & Analysis (4)
- ☐ ECS 158 Programming on Parallel Architectures (4)
- ☐ ECS 163 Information Interfaces (4)
- ☐ ECS 165A Database Systems (4)

*Note: A course used to fulfill the core requirement cannot be used as an elective.

Sample Schedule

Freshman	Fall	Winter	Spring
	MAT 21A	MAT 21B	MAT 21C
		ECS 32A or 36A	STA 13 or 32 or 100
Sophomore	Fall	Winter	Spring
	MAT 22A	STA 108	STA 141A
	MAT 21D	ECS 32B*	STA 106
Junior	Fall	Winter	Spring
	STA 131A or 130A	STA 131B or 130B	STA 141C
	MAT 167 or 168	STA 141B	STA 135
Senior	Fall	Winter	Spring
	STA/MAT/ECS 1XX	STA 142A or ECS 171	STA 160
		STA/MAT/ECS 1XX	

*Recommended Course (not required)