

**Master of Science in Applied Statistics,  
Option in Data Science**

(This new state-supported degree option was approved by the CSULB Academic Senate on October 24, 2024, approved by the President on October 28<sup>th</sup>, 2024, and approved by the CSU Chancellor's Office, November 8, 2024.)

**Prerequisites**

A bachelor's degree from an accredited college or university.

A grade of "B" or better in the following or their equivalents:

- MATH 247 - Introduction to Linear Algebra (3 units)
- MATH 380 - Probability and Statistics (3 units)
- STAT 381 - Mathematical Statistics (3 units)

or their equivalents; consult the Graduate Advisor.

**Advancement to Candidacy**

In addition to University requirements, the student must have completed all prerequisite courses listed above, with no grade less than "B". Students should file for Advancement upon completion of at least six units (and no more than nine units) of the Program, with at least a 3.0 GPA. Program of study must be approved by the appropriate Graduate Advisor, and Associate Dean in the College of Natural Sciences and Mathematics or designee.

**Requirements**

A minimum of 31 units of coursework, including a minimum of 22 units at the 500- or 600- level, subject to the following requirements.

**Applied Statistics Core**

Take all of the following:

- STAT 510 - Regression Analysis (3 units)
- STAT 520 - Statistical Inference (3 units)
- STAT 530 - Experimental Design (3 units)
- STAT 550 - Multivariate Analysis (3 units)
- STAT 560 - Nonparametric Statistics (3 units) or STAT 580 - Time Series (3 units)
- STAT 697 - Seminar in Applied Statistics (1 unit)

**Data Science Electives**

Take a minimum of 9 units from the following courses, including at least 3 units at the 500 level:

- STAT 471: Introduction to R Programming (3 units)
- STAT 473: Statistical Machine Learning (3 units)

- STAT 479: Neural Networks and Deep Learning (3 units)
- STAT 572: Computational Statistics (3 units)
- STAT 574: Data Mining (3 units)
- STAT 576: Data Informatics (3 units)
- MATH 521: Matrix Method in Data Analysis and Pattern Recognition (3 units)
- CECS 456: Machine Learning (3 units)

### Data Science Capstone

Take a minimum of 3 units from one of the following courses

- STAT 544: Statistical Consulting (3 units)
- STAT 697: Directed Studies (3 units)
- STAT 698: Thesis/Project (1 – 6 units)
  - A minimum of 3 units is required in STAT 698.

### Culminating Activities

In order to satisfy the culminating activity requirement (thesis, project, or comprehensive examination dependent upon the program), students must earn at least three (3) units and no more than six (6) units related to the completion of the culminating activity.

### Complete one of the following culminating activities:

- Comprehensive Exams:** Pass two comprehensive written examinations in Statistical Inference (STAT 520) and Experimental Design (STAT 530).
  - Students must meet a minimum of 31 units for the program.
- Thesis:** Subject to the approval of the Statistics Committee in the Department of Mathematics and Statistics, write a thesis in data science and defend it orally.
  - A letter grade of ‘B’ or better in each of STAT 510, STAT 520 and STAT 530 is required.
  - A student's highest grade in STAT 510, STAT 520, and STAT 530 (not the average of the two grades) is used for the purposes of the thesis requirement.
- Project:** Subject to the approval of the Statistics Committee in the Department of Mathematics and Statistics, complete a non-proprietary statistical project with an industrial company under the guidance of a faculty advisor in statistics. Write a final report and give an oral presentation of the project and its outcomes to the department. Specific requirements for completion of the project can be found on [the department’s statistics webpage](#).
  - A letter grade of ‘B’ or better in each of STAT 510, STAT 520 and STAT 530 is required.
  - A student's highest grade in STAT 510, STAT 520, and STAT 530 (not the average of the two grades) is used for the purposes of the project requirement.
  - A student must be a full-time or part-time employee with an industrial company and the project topic must be related and benefitted to the current job.

Academic Plan Code: MATHMS07PB

CIP: 30.7001

CSU Code: 17035

Career: Graduate

College: College of Natural Science and Mathematics

Department: Mathematics and Statistics

Delivery: Fully Face-to-Face

STEM Eligible