

Master of Data Science

The Master of Data Science (MDS) prepares students for careers as Data Scientists in high-technology industries, business, and government. The MDS is an interdisciplinary degree program that provides foundational knowledge in statistics, machine learning, and computer science. Students learn core knowledge in probability and statistics, programming, data management, data analysis and visualization, and interpretation of empirical results. During the final quarter, students participate in two capstone courses. A critical component of the generation and analysis of empirical data is the ability to document the methodology and design employed, provide interpretable results, and communicate the salient findings of the analysis to a broad audience.

The first capstone course consists of the development an empirically-driven solution to a real-world problem. The project will cover the full spectrum of the analytic process, ranging from data gathering, manipulation, visualization, analysis, and interpretation of results. The second capstone course focuses on scientific writing and communication for presenting analytic results of the capstone project to a broader audience. At the completion of this program, students will be able to obtain, manage, and analyze data from multiple sources and disciplines to yield empirically-driven solutions. Graduates will be well prepared to contribute to multi-disciplinary teams that rely on multiple types of data for guiding business and research decisions. They will be knowledgeable about the techniques for obtaining, cleaning and managing data, statistical and machine learning methodologies for analyzing data and building associative and predictive models, and communicating the impact of results to collaborators and teams.

Applicants are evaluated on the basis of their prior academic record and letters of reference from people either in the student's academic history or work settings. Students applying to the program may have degrees in any field, though preference will generally be given to those with degree in STEM fields including data science, computer science, statistics or biostatistics, computer or electrical engineering. All applicants are evaluated on the materials submitted: letters of recommendation, official college transcripts, and personal statement.

We strongly encourage all applicants to additionally submit either official GRE test scores or a relevant work portfolio (staff support is budgeted into our program to help us process these). For more information, contact the ICS graduate counselor at 949-824-5156 or gcounsel@ics.uci.edu.

All MDS students are expected to maintain a minimum GPA of 3.0 throughout the program with no individual grade lower than a B-.

Course Requirements

A. Complete:

COMPSCI 220P	Databases and Data Management
COMPSCI 260P	Fundamentals of Algorithms with Applications
COMPSCI 273P	Machine Learning and Data Mining
STATS 200AP	Intermediate Probability and Statistical Theory I
STATS 200BP	Intermediate Probability and Statistical Theory II
STATS 210P	Statistical Methods I
STATS 211P	Statistical Methods II
DATA 296P	Capstone Writing and Communication
DATA 297P	Capstone Design and Analysis

B. Select at least two COMPSCI courses and at least one STATS course from the list below: ¹

COMPSCI 222P	Principles of Data Management
COMPSCI 223P	Transaction Processing and Distributed Data Management
COMPSCI 224P	Big Data Management
COMPSCI 261P	Data Structures with Applications
COMPSCI 271P	Introduction to Artificial Intelligence
COMPSCI 274P	Neural Networks and Deep Learning
COMPSCI 275P	Graphical Models and Statistical Learning
STATS 205P	Bayesian Data Analysis
STATS 240P	Multivariate Statistical Methods
STATS 245P	Time Series Analysis
STATS 262P	Theory and Practice of Sample Survey
STATS 270P	Stochastic Processes

¹ For additional courses eligible to fulfill the elective requirement, visit the ICS website.

Final Examination

The final examination includes two components:

- Performance on a capstone project that incorporates skills and knowledge from the entire program.
- Presentation and communication of the capstone project.

Normative Time

Students making normal progress are expected to complete the degree program in approximately 15 months (5 quarters).

Course Substitutions

A student who has taken relevant graduate courses at UCI or another university may petition to have a specific course certified as equivalent to one that satisfies this program. The petition should describe the course and should be approved by the MDS program director. Only two courses can be substituted.