

**University of Southern California**  
**VITERBI SCHOOL OF ENGINEERING**

Master of Science in Applied Data Science  
*Program Learning Objectives*

The USC Viterbi School of Engineering Master of Science in Applied Data Science will train students as data scientists. This degree provides students with the knowledge and skill to solve real-world world challenges that require a combination of data management and data analytics skills. Students will learn how to use the latest big-data infrastructures, such as Hadoop and Spark. They will learn how to use the various analytical tools, including machine learning, data mining and data visualization. And students will learn how to apply these tools to real-world problems.

This degree is designed for students with a range of backgrounds, but students are expected to have at least a strong math and science background to pursue this degree. Students that do not have much training in computer science will first learn the basics of data science, including data formats, tools and techniques. They learn how to build data processing programs in Python, and they will learn how to apply the latest analytical tools through hands-on homework and projects. Students with a computer science background will be able to jump directly into the more advanced data science courses including data management, machine learning, data mining, and statistics for data science. Once students have completed the introductory and core courses, they are given a choice of electives to allow them to pursue their own interests within data science.

- Upon completion of the USC Viterbi School of Engineering Master of Science in Applied Data Science degree program, students will be able to unleash the full power and potential of data for research and business application purposes.
- USC students enrolled in the USC Viterbi School of Engineering Master of Science in Applied Data Science degree program will demonstrate understanding of computational information systems and language technologies, data management and databases, programming languages, coding theory and practice, information visualization theory and practice, machine learning and artificial intelligence. Elective coursework will cover topics such as statistical learning and probability theory, security and privacy, user experience design and usability theory, build knowledge graph, and high-end data storage management solutions.
- Upon completion of the USC Viterbi School of Engineering Master of Science in Applied Data Science degree program, students will be able acquire, process, analyze and visualize information, and work with domain experts to extract insights from big data. They will be able to apply their broad knowledge of data science techniques to practical problems like leading research and development of learning models for data analysis, leading teams in collaboration with product management and engineers departments to map company needs and propose data-driven solutions, communicate data insights to decision and key policy makers, or embarking upon research-oriented PhD studies in data driven disciplines.