

# Data Science MS (DASC)

---

## COURSES

### **DASC 5191. ADVANCED STUDY IN DATA SCIENCE. 1 Hour.**

Individual research projects in Data Science. Prior approval of the DASC Graduate Advisor is required for enrollment. A written report is required. Graded F, I, P.

### **DASC 5300. FOUNDATION OF COMPUTING. 3 Hours.**

Basics of programming, data structures, and algorithms. Introduction to databases and operating systems. Basics of discrete structures and computability. Course is used for the Master's in Data Science degree program and certificate programs for non-CSE majors. It cannot be taken for credit towards any CSE degree. Prerequisite: DASC Major.

### **DASC 5301. DATA SCIENCE. 3 Hours.**

This inspirational course follows a data-science-for-all perspective that views data acumen as part of literacy. It aims to instill in students the data acumen, i.e., the basic skills to wrestle with data, to draw insights from data, to make sound decisions responsibly using data, and to effectively communicate about data-driven findings and decisions. Topics include 1) data management: data curation, preparation, model, and querying; 2) data description and visualization: exploratory data analysis, graphics, user interface and user experience design; 3) machine learning and knowledge discovery: supervised learning, unsupervised learning, pattern and knowledge extraction, deep learning, model evaluation and interpretation. Prerequisite: Data Science Major.

### **DASC 5302. INTRODUCTION TO PROBABILITY AND STATISTICS. 3 Hours.**

Topics include descriptive statistics, set theory, combinatorics, mathematical expectation, probability distributions, confidence interval estimation, regression analysis, analysis of variance, and design of experiments. Prerequisite: Data Science Major.

### **DASC 5303. DATA SCIENCE PROJECT MANAGEMENT. 3 Hours.**

Management and control of multifaceted science and engineering projects. Coordination and interactions between client and various service organizations. Project manager selection. Typical problems associated with various phases of project life cycle. Case studies illustrate theories and concepts. Students will be expected to demonstrate an understanding of communication and collaboration, including workflow, reproducibility, codebase management, collaboration tools, oral and written communication, presentation and storytelling, and team management, as well as ethics, such as understanding bias, fairness, credibility and misinformation, security, privacy, and codes of conduct. Prerequisite: graduate standing.

### **DASC 5309. DATA SCIENCE CAPSTONE PROJECT. 3 Hours.**

Students will design, develop and present a substantial data science project by applying the knowledge and skills acquired from relevant courses. The projects will be drawn from real-world applications and data through collaboration with community partners. Prerequisite: Completed 18 graduate credit hours.

### **DASC 5391. DATA SCIENCE APPLICATIONS. 3 Hours.**

Individually approved research or industry internship in data science. Prerequisite: Graduate Advisor approval.