MATHEMATICS OF DATA AND COMPUTING (MDC)

Mathematics of Data and Computing (MDC) Courses

MDC 1213. Sociocultural Foundations of Mathematics, Data Science, and Computing. (3-0) 3 Credit Hours.

This introductory survey course for freshmen aims to explore the connections between mathematics, data science, and artificial intelligence, with an emphasis on their roles in shaping and understanding human culture and experience. Students will be guided through a series of 30 lessons that delve into how these fields intersect with ideas, values, beliefs, and other cultural aspects, fostering aesthetic and intellectual creation. Throughout the course, students will have access to the GPT-4 language model to assist with content generation and idea exploration. Course Fee: DL01 $75; LRS1 $45; STSI $21.

MDC 4153. Mathematical Foundations of Data Analytics. (3-0) 3 Credit Hours.

Prerequisite: MAT 2253, or MAT 2233 and MAT 2213 (or MAT 2214 in previous catalogs). This immersive Data Analytics course equips students with the essential mathematical skills and knowledge required to analyze, visualize, and interpret complex datasets. Students will be exposed to the entire life cycle of data analysis. Throughout the course, participants will explore basic operations in scripting languages, delve into advanced visualization techniques, and investigate linear discriminants, generalized regressions, time series analysis, non-linear discriminants, and clustering. Students will program essential algorithms, instead of using toolboxes, to explore the discrete Fourier transform, generalized regressions, clustering algorithms, and artificial neural networks. Furthermore, the course will provide an understanding of relational databases and their integration with programming environments, as well as guidance on creating effective data analysis plans. Emphasis will be placed on solution architecture, reproducibility, configuration management, and generating standardized reports. By the end of the course, students will have a strong foundation in data analytics, allowing them to transform raw data into valuable insights for decision-making. This course is intended for Mathematics, Mathematics for Data and Computing, and Mathematics for Teaching majors. (Same as MAT 4153. Credit cannot be earned for both MAT 4153 and MDC 4153.) This course has Differential Tuition.