Data Science (DS)

Courses

DS 210 Introduction to Data Science (3 Hours)
In this course students receive an introduction to the main tools and ideas in the data scientist's toolbox. The course gives an overview of the data, questions, techniques and tools that data analysts and data scientists work with. This course provides a conceptual introduction to the ideas behind turning data into actionable knowledge and tools that will be used to analyze this data. The course will cover collecting, cleaning and sharing data. Additionally, this course will cover how to communicate results through visualizations. 3 hrs. lecture/wk.

DS 220 Data Visualization (3 Hours)
This course introduces students to key design principles and techniques for interactively visualizing data. In addition to understanding how visual representations are used in the analysis and understanding of complex data, students will acquire data visualization skills including designing effective visualizations and creating interactive visualizations using spreadsheets. 3 hrs. lecture/wk.

DS 230 SQL for Data Analysis (3 Hours)
In this course students will focus on how to apply the Structured Query Language (SQL) to data analysis tasks. Spreadsheets will be used for the visualization of data. Additionally, basic statistics will be covered. All data will be extracted from relational tables. 3 hrs. lecture/wk.

DS 240 Introduction to Statistical Programming (3 Hours)
Students in this course will use a statistical programming language to perform effective data analysis. Students will acquire programming skills including reading data, accessing statistical packages, writing functions, debugging, profiling code, organizing code and commenting code. 3 hrs. lecture/wk.

DS 250 Data Analysis (3 Hours)
In this course the student will manipulate, process, clean, analyze and visualize data in a programming language. Real world datasets will be utilized. Structured data will be emphasized. 3 hrs. lecture/wk.

DS 260 Data Mining (3 Hours)
This course will provide students with an understanding of fundamental data mining methodologies and the ability to formulate and solve problems with these methodologies. Particular attention will be paid to the process of extracting data, analyzing it from many dimensions or perspectives, then producing a summary of the information in a useful form that identifies relationships within the data. The lectures will be complemented with hands-on experience with data mining software to allow development of execution skills. 3 hrs. lecture/wk.

DS 270 Introduction to Machine Learning (3 Hours)
This introductory course gives an overview of machine learning concepts, techniques and algorithms. Supervised and unsupervised machine learning will be covered. Machine learning is an integral part of data analytics, which deals with developing data-driven insights for better designs and decisions, and gives computers the ability to learn without being explicitly programmed. 3 hrs. lecture/wk.

DS 280 Big Data Architecture (3 Hours)
This course covers emerging big data architectures that deal with large amounts of unstructured and semi-structured data. This course is designed for developers who need to create applications to analyze big data stored in distributed file systems. Topics include file architecture, data retrieval, performance and data analysis. 3 hrs. lecture/wk.