

DSE - DATA SCIENCE FOR ENGINEERING

DSE 5070 Introduction to Data Computing and Programming Cr. 3

Not for CSC major credit. Background in calculus and linear algebra is necessary. This course introduces students to the foundation of data computing problem solving using programming languages of Python and R. It provides students with skills that will enable them to make productive use of “data science” techniques to model and interpret data. The course covers the following topics: 1) Basic concepts of probability and statistics; 2) Python and R basics; 3) Data pre-processing, modeling, and visualizing with Python/R. Offered Yearly.

DSE 6000 Computing Platforms for Data Science Cr. 3

Covers an overview of various computing platforms for developing, deploying, configuring a wide range of data science applications for different domains. The programming models, characteristics of supported workload, and management of performance, cost and scalability will be compared side by side. Offered Yearly.

Restriction(s): Enrollment is limited to students with a major in Advanced Analytics, Data Computing, Data-Driven Business or Statistics.

DSE 6100 Data Modeling and Management Cr. 3

Covers both traditional data modeling and big data modeling from conceptual design, logical-to-physical mapping, to physical schema optimization. Provenance management, which concerns about the lineage and history of a data product, is important for the repeatability of data analysis. The course will present various concepts of provenance and its relationships to data quality and trust. Offered Yearly.

Restriction(s): Enrollment is limited to students with a major in Advanced Analytics, Data Computing, Data-Driven Business or Statistics.

DSE 6200 Modern Databases Cr. 3

Covers an overview of databases, tools, and computing platforms. One focus is basic SQL, NoSQL, and NewSQL programming skills and a comparison of their cons and pros. In particular, the students will learn the criteria to choose a database system, either SQL or NoSQL, based on the requirements of an application domain. Offered Yearly.

Restriction(s): Enrollment is limited to students with a major in Advanced Analytics, Data Computing, Data-Driven Business or Statistics.

DSE 6300 Data Science Applications Development Cr. 3

Focuses on the software engineering cycle of developing a comprehensive data science application. Students will have the freedom to choose a computing platform, or a NoSQL database as the underlying infrastructure for developing a data science application. Students will also choose a particular domain and problem in which one needs to address one of the big data challenges: volume, velocity, or variety. Offered Yearly.

Restriction(s): Enrollment is limited to students with a major in Advanced Analytics, Data Computing, Data-Driven Business or Statistics.

DSE 7500 Data Science and Analytics Practicum Cr. 6

Apply theoretical knowledge and skills acquired throughout the Data Science and Business Analytics MS program to a challenging project involving real-world business problems/opportunities and data analytics in a reliable, scalable, distributed computing environment for optimal outcomes. Offered Yearly.

Restriction(s): Enrollment is limited to students with a major in Advanced Analytics, Data Computing, Data-Driven Business or Statistics; enrollment is limited to Graduate level students.

Equivalent: DSA 7500, DSB 7500, STA 7800