ANALYTICS (DATA)

Visit the Course Schedule Search website to find out when courses will be offered during the academic year.

Read more about the courses within this subject prefix in the descriptions provided below.

DATA 557 - Introduction to Data Science and Analytics
Credits: 4

An introduction to data science and analytics. The landscape of analytics, including an overview of industries and sectors using analytics or expected to use analytics in the near future. Data generation, data management, data cleaning, and data preparation. Ethical use of data. Focus on visual and exploratory analysis. Project-based, with an emphasis on collaborative, experiential learning. Programming and statistical software will be used, but previous experience is not required.

Attributes: Environment,TechSociety(Disc)
Grade Mode: Letter Grading

DATA 674 - Predictive and Prescriptive Analytics I
Credits: 4

A first course in predictive and prescriptive analytics. Supervised learning models including linear models and CART models. Model assessment and scoring methods, including cross-validation. Regularization and model tuning. Unsupervised learning models including k-means clustering. Project-based, with an emphasis on collaborative, experiential learning. Statistical software will be used and programming required.

Prerequisite(s): MATH 425 with a minimum grade of D- and COMP 570 with a minimum grade of D- and DATA 557 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA 675 - Predictive and Prescriptive Analytics II
Credits: 4

A second course in predictive and prescriptive analytics. Time series analysis and model ensembles. Bootstrapping, simulation, optimization. Monte Carlo methods. Project-based, with an emphasis on collaborative experiential learning. Statistical software will be used and programming required.

Prerequisite(s): DATA 674 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA 690 - Internship Experience
Credits: 1-4

A field-based learning experience via placement in a business, non-profit, or government organization using analytics. Under the guidance of a faculty advisor and workplace supervisor, students gain practical experience solving problems and improving operational processes using analytics. May be repeated but no more than 4 credits may fill major requirements.

Prerequisite(s): UMST 582 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Credit/Fail Grading

DATA 750 - Neural Networks
Credits: 4

Artificial neural networks power the recent advances in computer vision, speech recognition, and machine translation. This is a first course on neural networks with a focus on applications in computer vision and natural language processing. Topics will include generic feedforward neural networks, convolutional neural networks for computer vision tasks, and recurrent neural networks with application to natural language processing, with other topics to be selected based on the interests of the instructor and the class.

Equivalent(s): COMP 750
Grade Mode: Letter Grading

DATA 757 - Mining Massive Datasets
Credits: 4

A first course in large-scale analytics and data science. Characteristics of big data and the emerging software stack for working with massive datasets, including Hadoop and MapReduce. Algorithms for extracting information from massive datasets. A first course in linear algebra is not a prerequisite, but is recommended.

Prerequisite(s): MATH 425 with a minimum grade of D- and DATA 557 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA 790 - Capstone Project
Credits: 4

Under direction of a faculty mentor, students work in teams to find solutions to complex real-world problems using analytics. Projects may come from internal or external sources. Students define the problem, obtain the necessary data, develop suitable models and solutions, and present their results.

Grade Mode: Letter Grading