

DATA SCIENCE (DSC)

Division: Mathematics, Engineering Technologies and Computer Sciences (METCS) Division

DSC 141 Data Science I - Fundamentals (2 Credits)

In this course, students will be able to gain basic knowledge in the field of data science and analytics. This covers an introduction to data science and data analytics, including data acquisition, cleaning and transformation, visualization, and distribution. State of the art software tools and techniques for performing data science tasks will be explored. Students will be able to work on real-world projects. They will use algorithmic techniques and varied math skills to implement solutions in a programming language in order to get the best possible predictions.

Pre-requisites: CSC 121 with a minimum grade of C and MTH 101 with a minimum grade of C

DSC 241 Data Sci II - Machine Learning (2 Credits)

This course serves as a continuation of Data Science I - Fundamentals (DSC 141). Students will be able to gain knowledge of advanced topics and tools in the field of data science. They will be trained to make better predictions using machine learning. Topics include the use of decision trees, clustering, neural networks, and natural language processing. Students will use their fundamental skills in data science, including a programming language plus statistics and probability for problem solving by combining these two in generating better outcomes in the predictive value of data.

Pre-requisites: CSC 122 with a minimum grade of C and DSC 141 with a minimum grade of C and MTH 122 with a minimum grade of C and MTH 239 with a minimum grade of C

DSC 242 Intro to Artificial Intel (3 Credits)

Artificial Intelligence is the subset of data science that models processing resembling the human brain. It uses intelligent and smart systems to offer automation of business processes, efficiency, and productivity. This course introduces concepts, approaches, and techniques of Artificial Intelligence, and focuses on materials that are fundamental and have a broad scope of applications. Topics include problem solving, search, knowledge and reasoning, logical agents, first-order logic and inference, uncertain knowledge and reasoning, quantifying uncertainty, probabilistic reasoning, perception, pictorial knowledge representation, and search in frequency and spatial domains. Additional topics include machine learning, neural computation, evolutionary computation, and robotics.

Pre-requisites: CSC 225 with a minimum grade of C and MTH 141 with a minimum grade of C and MTH 239 with a minimum grade of C

DSC 243 Data Visualization (3 Credits)

Data visualization is the graphical representation of information and data using tools such as charts and graphs to provide a pictorial representation of data trends, outliers, and patterns. In the world of Big Data, visual data tools and technologies are essential to analyze massive amounts of information and make data-driven decisions. In this course, students will gain knowledge in computer graphics, designing, developing, and applying techniques for both information and volume visualization. Software tools such as Tableau will be used to represent and interpret information in various visual forms, and volumetric visualization algorithms such as marching cubes and ray casting will be used for big data visualization of 3D datasets in scientific domains. Students will work on projects to help them gain knowledge about theoretical design principles and their application using real-world data.

Pre-requisites: DSC 241 with a minimum grade of C and CSC 231 with a minimum grade of C