MASTER OF SCIENCE IN COMPUTING & DATA ANALYTICS (MCDA)

MCDA 5510 Software Development in Business Environment
3 credit hours
Students study the complete software development process in a business environment, including the system analysis, design, implementation, and testing of software systems. Students will work in teams to develop software systems for business applications using real world methodologies.

MCDA 5511 Current Practices in Computing and Data Science I
3 credit hours
Prerequisite: Permission of the Coordinator of M.Sc. in Computing and Data Analytics

This course will allow students to acquire skillsets and build a portfolio in a designated computing and/or data science paradigm based on current trends in the industry. The students will learn theoretical and practical aspects of the paradigm by implementing real-world solutions for one or two projects.
Note: Credit can only be obtained for both MCDA 5511 and MCDA 5512 if the specific topics and trends are covered in the courses do not significantly overlap, as assessed by the Program Coordinator.

MCDA 5512 Current Practices in Computing and Data Science II
3 credit hours
Prerequisite: Permission of the Coordinator of M.Sc. in Computing and Data Analytics

This course will allow students to acquire skillsets and build a portfolio in a designated computing and/or data science paradigm based on current trends in the industry. The students will learn theoretical and practical aspects of the paradigm by implementing real-world solutions for one or two projects.
Note: Credit can only be obtained for both MCDA 5511 and MCDA 5512 if the specific topics and trends are covered in the courses do not significantly overlap, as assessed by the Program Coordinator.

MCDA 5520 Statistics and Its Applications in Business
3 credit hours
Emphasis in this course is on developing the conceptual foundations and an in-depth understanding of statistical techniques used in data analytics. Following the descriptive/predictive/prescriptive framework that is commonly imposed on topics in analytics, it emphasizes the analysis and solution of complex business decision problems using computer-based models.

MCDA 5530 UI/UX Design and Quality Engineering
3 credit hours
Students design, prototype and evaluate user interfaces using a variety of methods. Topics covered include business analysis; human capabilities; interface technology; interface design methods; interface evaluation; quality assurance and visualization methods for data analytics.

MCDA 5540 Managing and Programming Databases
3 credit hours
Students examine the design, implementation, and management of database (db) systems. Students consider the implications of data structures and indexing on performance; query processing algorithms and optimization; and concurrency control. In addition to relational db models. Students study data models intended to manage alternative types of data such as structured text, multimedia data, and unstructured ones in the context of Big Data.

MCDA 5550 Web, Mobile, and Cloud Application Development
3 credit hours
Students develop applications that are accessible through the internet on a variety of platforms including cloud environments and mobile devices. An emphasis is placed on designing and deploying mobile applications; push technology; data structures and memory management; interface design; Scalable Vector Graphics (SVG); cloud computing; and privacy/security.

MCDA 5560 Business Intelligence and Data Visualization
3 credit hours
Students use tools and techniques for customer and product profiling using classification and clustering, analysis of demographic information for business decision making, and supply and demand management using predictive models. Professional business intelligence software is used with real-world data sets to effectively analyze statistical patterns for strategic decision making.

MCDA 5570 Big Data and Information Technology Management
3 credit hours
Students are provided with processes, models, and frameworks to develop organizational IT strategy in the context of big data. Students focus on leading software and hardware platforms, business software applications and their strategy maps (CRM, ERP, supply chain management, product lifecycle management. Technology adoption, emerging technologies, and diffusion of innovations are covered.

MCDA 5580 Data and Text Mining
3 credit hours
With the availability of large databases to store, manage and assimilate data, the new thrust of data mining lies at the intersection of DB systems, artificial intelligence, and algorithms that efficiently analyze data. Highly complex big data techniques present many interesting computational challenges. Students use concepts from pattern recognition, statistics, data analysis, text mining, network analysis, and sentiment analysis, and machine learning for actionable analytics.

MCDA 5585 Master's Project – System and Functional Analysis
3 credit hours
This is the first of a two-part series of courses involving the design, development, implementation, and testing of a computing system with focus on data analytics. Depending on the nature of the project students may choose a varying degree of balance between data analytics and system development. Students work in teams to develop a system under supervision of a faculty member. The first phase involves system analysis and development of the graphical interface. The course also includes seminars on project management from academic and industrial faculty members.

MCDA 5586 Master's Project – Implementation and Analysis of Results
3 credit hours
This is the second of a two-part series of courses involving implementation of the complete system, testing, and simulated cut-over to production.

MCDA 5587 Graduate Internship I
3 credit hours
This 16 week internship provides students an experiential learning opportunity through work experience in a Computing and Data Analytics environment. Students apply the concepts learned in the program and are required to submit reports during and at the end of the work term. An employer assessment of student performance will be conducted. The course also includes seminars on project management from academic and industrial faculty members.

MCDA 5588 Graduate Internship II
3 credit hours
This second 16 week internship provides students with experiential learning opportunity through work experience in a Computing and Data Analytics environment. Students apply the concepts learned in the program and are required to submit reports during and at the end of the work term. An employer assessment of student performance will be conducted.