

# AI, MACHINE LEARNING AND AUTOMATION IN BUSINESS

Be on the leading edge, tapping into new technologies that transform businesses.

Artificial intelligence is a disruptive technology in the business realm with transformational impact. From detecting malware and preventing money laundering to automating insurance claims and optimizing inventory and improving product recommendations and more, AI will continue to necessitate changes in core business processes and models. Within the past few years, machine learning, while not fully tapped in the business sphere, has become more effective and widely utilized. Tomorrow's leaders and managers will need to integrate machine learning where appropriate, incorporating its capabilities with those of humans'. The design and implementation of new combinations of technologies with human skills to meet customers' needs will require critical thinking skills, creativity, and project planning.

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## Admission requirements

The graduate certificate program is open to all individuals holding a BS, MS or PhD degree in areas such as business, social sciences, technology, engineering, or related disciplines. In order to receive a Graduate Certificate, the student must have an average graduate cumulative grade point of 3.0 or better on a 4.0 scale in the certificate courses taken. Students admitted only to the certificate program will have non-degree graduate status but will earn graduate credit for the courses they complete. If the four-course sequence approved by the graduate advisor is completed with a grade of B or better in each of the courses taken, the student will, upon application, be admitted to the Master of Business Administration or to the Master of Science in Information Science and Technology. The certificate courses taken by students admitted to the program will count towards the MBA program or the M.S. in Information Science and Technology degree program. Once admitted to the Certificate program, a student will be given three years to complete the program as long as a B or better average is maintained in the courses taken.

Graduate certificates give you the opportunity to broaden your knowledge in a particular discipline and stay competitive in today's marketplace.

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# COURSE DESCRIPTIONS

Most courses are offered both on campus and via distance education

## REQUIRED CORE COURSES

### **BUS 5730 Machine Learning and Artificial Intelligence for Business**

Explores various approaches to machine learning and artificial intelligence, along with their numerous applications in business. Describes some of the many technological approaches to business problems that are considered part of machine learning and artificial intelligence, such as neural networks and deep learning.

*Prerequisites: IS&T 1552 or Comp Sci 1510; or Graduate standing, understanding of management information systems, programming knowledge.*

### **IS&T 5535 Machine Learning Algorithms and Applications**

Introduces techniques of modern machine learning methods with applications in marketing, finance, and other business disciplines. Topics include regression, classification, resampling methods, model selection, regularization, decision trees, support vector machines, principal component analysis, and clustering, etc. R programming is required.

*Prerequisites: One of Stat 3111, Stat 3113, Stat 3115, Stat 3117 and either IS&T 1552 or Comp Sci 1510; or Graduate Standing with knowledge of calculus, statistics, and programming.*

## ELECTIVE COURSES (CHOOSE TWO)

### **BUS 6723 Artificial Intelligence, Robotics, and Information Systems**

The course, designed for business executives, covers management of information to revitalize business processes, improve business decision-making, embrace emerging and disruptive technologies, and gain competitive advantages. The course also covers implications of AI, automation, machine learning, and robotics on business and society. MBA Core.

*Prerequisites: Graduate Standing.*

### **IS&T 5520 Data Science and Machine Learning with Python**

Examines data science methodologies for scraping, manipulating, transforming, cleaning, visualizing, summarizing, and modeling large-scale data as well as supervised and unsupervised machine learning algorithms applied in various business analytics and data science scenarios. Python libraries such as Pandas, NumPy, Matplotlib, and Scikit-learn are utilized.

*Prerequisites: One of Stat 3111, Stat 3113, Stat 3115, Stat 3117 and either IS&T 1552 or Comp Sci 1510; or Graduate Standing with knowledge of calculus, statistics, and programming.*

### **IS&T 6443 Information Retrieval and Analysis**

Covers the applications and theoretical foundations of organizing and analyzing information of textual resources. Topics include information storage and retrieval systems, web search engines, text mining, collaborative filtering, recommender systems. Students will also learn the techniques with the use of interactive tools such as SAS

*Prerequisites: ERP 5410 or statistics knowledge.*

### **IS&T 6445 Database Marketing**

Intro to methods and concepts used in database marketing: 1) predictive modeling techniques (e.g., regression, decision trees, cluster analysis) and 2) standard processes for mapping business objectives to data mining goals to produce a deployable marketing model. Metrics like lifetime value of a customer and ROI will be covered. Several application areas covered.

*Prerequisites: Statistics understanding, programming understanding, familiarity with spreadsheets.*