BUSINESS ANALYTICS (BA)

BA 0500 Business Analytics **3 Credits**
Prerequisite: OM 0400.
This course introduces basic skills necessary for business analytics such as data analysis using basic statistics, data visualization and summarization, descriptive and inferential statistics, spreadsheet modeling for prediction, linear regression, risk analysis using Monte-Carlo simulation, linear and nonlinear optimization, and decision analysis. Microsoft Excel is used as the platform for conducting analyses and performing statistical calculations.

BA 0505 Python for Business Analytics **3 Credits**
In this course, we introduce Python as a language and tool for collecting, preprocessing, and visualizing data for business analytics. Since Python is one of the most popular programming languages, along with R, in data mining and business analytics, its fundamental programming logic and knowledge is essential for students to apply in data mining and to succeed in the job market. Specifically, this course focuses on the data-engineering phase, which includes collecting, preprocessing, and visualizing data, with respect to applications in business modeling, optimization, and statistical analysis. In addition, a number of mini projects will be used as vehicles to cover the main applications of data analytics, including recommender systems, text analytics, and web analytics.

BA 0510 Databases for Business Analytics **3 Credits**
This course introduces databases and data management in three parts. The first part covers basic database fundamentals. The second part is a hands-on introduction to Structured Query Language (SQL) for defining, manipulating, accessing, and managing data, accompanied by the basics of data modeling and normalization needed to ensure data integrity. The course concludes with a comprehensive database project that gives each student the opportunity to integrate and apply the new knowledge and skills learned from this class. Advanced topics such as distributed database systems, data services, and NoSQL databases are also discussed.

BA 0540 Business Intelligence **3 Credits**
Prerequisites: BA 0500, BA 0510, QA 0500.
This course will change the way students think about data and its role in business. Increasingly, managers rely on intelligent technology to systematically analyze data to improve their decision-making. In many cases, automating analytical and decision-making processes is necessary because of the large volume of data and the speed with which new data are generated. In this course, we will examine how data warehousing, modeling, and visualization can be used to improve managerial decision making.

BA 0545 Data Mining **3 Credits**
Prerequisites: BA 0500, BA 0505.
Businesses, governments, and individuals create massive collections of data as a byproduct of their activity. In this course, we will study the fundamental principles and techniques of data mining through real-world examples and cases to place data mining techniques in context, to develop data-analytic thinking, and to illustrate that proper application of these techniques is as much an art as it is a science. In addition, we will work "hands-on" with contemporary data mining software.

BA 0590 Capstone: Business Analytics Applications **3 Credits**
Prerequisites: BA 0540, BA 0545.
This capstone course for the MS Business Analytics program is to be taken in the last term before graduation. The purpose is to apply and integrate knowledge and skills learned in the program (statistics, modeling, data management, data mining, etc.) to a live data analytics project. The course is project-based, with students collaborating on their work under the guidance of faculty members. Application areas and format of the projects may vary, depending on faculty, dataset, and budget availability. However, the work should be rich enough to demonstrate mastery of business modeling and technology, with each student making a unique, demonstrable contribution to completion of the work.