

# BUSINESS ANALYTICS (BAN)

## **BAN 610. Introduction to Business Analytics. 3 Credits.**

This course develops ideas for helping to make decisions based upon the examination of data. Topics include variability, data display and summary statistics, regression, and correlation, probability, probability distributions, sampling, the central limit theorem, confidence intervals and hypothesis testing. Attention is also given to the design of experiments and analysis of variance, frequency distributions, statistical inference and sampling theory.

**Offered:** Every year, Fall and Spring

## **BAN 615. Predictive Modeling. 3 Credits.**

The course introduces the techniques of predictive modeling and analytics in a data-rich business environment. It covers the process of formulating business objectives, data selection, preparation and partition to successfully design, build, evaluate and implement predictive models for a variety of practical business applications (such as marketing, customer retention, delinquency and collection analytics, fraud detection and insurance). Predictive models such as classification and decision trees, neural networks, regressions, pattern discovery analysis and other techniques are studied.

**Prerequisites:** Take BAN 610.

**Offered:** Every year, Fall

## **BAN 621. Data Management. 3 Credits.**

The concepts, principles, issues and techniques for managing corporate data resources are covered, including techniques for managing the design and development of large database systems. Data warehousing, data mining and database administration are emphasized. Students engage in hands-on-learning and work individually or in teams to complete a real-world project using contemporary data management tools and techniques.

**Offered:** Every year, Fall and Spring

## **BAN 622. Data Warehousing. 3 Credits.**

This course focuses on the design and implementation of data warehouses, identifying key architecture differences between data warehouses and transactional databases. It also focuses on the interface to data warehouses to better understand how large amounts of information are used to enable organizations to make better decisions.

**Prerequisites:** Take BAN 621.

**Offered:** Every year, Spring

## **BAN 628. Data Mining. 3 Credits.**

This course focuses on the application of common data mining techniques. Students focus on developing business solutions by applying techniques such as market basket analysis, association rules, cluster analysis and time series.

**Offered:** Every year, Fall

## **BAN 629. Text Mining. 3 Credits.**

This course builds upon previously introduced data mining methods, focusing specifically on techniques for text extraction and mining. Topics include efficient text indexing; document clustering and classification; information retrieval models; enhancement of structured data; scenario detection techniques; and using textual data in predictive models.

**Offered:** Every year, Fall and Spring

## **BAN 650. Data Visualization. 3 Credits.**

This course provides an introduction as well as hands-on experience to the field of data visualization. Students learn basic visualization design and evaluation principles to create meaningful displays of quantitative and qualitative data. They learn techniques for visualizing multivariate, temporal, text-based, geospatial, hierarchical and network/graph-based data.

**Offered:** Every year, Fall and Spring

## **BAN 660. Optimization. 3 Credits.**

This course focuses on developing computational methods to solve various optimization problems. Advanced regression analysis, time series analysis and other techniques are used to support improved forecasting and decision making.

**Prerequisites:** Take BAN 610, BAN 615.

**Offered:** Every other year

## **BAN 661. Web Analytics and Web Intelligence. 3 Credits.**

This course focuses on the analysis of a variety of web metrics including tracking, traffic and visitor behavior, tactics and strategies to successfully market on the Web to make data-driven decisions. Business analytics tools and techniques are utilized to extract and analyze web-scale data to guide strategic decision making. Topics address solutions for measurably higher leads, sales, brand recognition, customer satisfaction or lower service costs.

**Prerequisites:** Take BAN 610.

**Offered:** As needed

## **BAN 663. Programming for Data Analysis. 3 Credits.**

Students learn to program and use R for effective data analysis. Reading data, accessing R packages, writing functions, debugging, profiling code and organizing and commenting code also are covered. Working examples of topics in statistical data analysis are provided. The course also addresses installation and configuration of software as necessary for a statistical programming environment.

**Offered:** As needed

## **BAN 664. Health Care Analytics. 3 Credits.**

This course provides a foundation on data analytics in health care and an understanding of the main concepts and issues. Contemporary tools and technologies are applied to develop an analytics solution to selected health care problems.

**Prerequisites:** Take BAN 621.

**Offered:** As needed

## **BAN 665. Big Data and Hadoop. 3 Credits.**

The concept, principles, issues and techniques for managing Big Data information management resources are covered. The course explores how Big Data fits into an organization's information management strategy. Focus is on the Hadoop platform, emphasizing how it is used to design and maintain Big Data to support analytics.

**Offered:** Every year, Summer

## **BAN 667. Business Design and Object-Oriented Analysis. 3 Credits.**

This course considers systems-development methods, analysis and design techniques with a focus on object-oriented analysis and design. The application of systems analysis and design concepts using current tools, techniques and approaches is covered. Students engage in hands-on learning and work in teams to complete a real-world project using contemporary analysis and design methodologies and tools.

**Offered:** Every year, Summer

**BAN 668. Introduction to Python Programming for Data Analysis. 3 Credits.**

This course will serve as an introduction to programming in Python for Data Analysis. The course will introduce students to the concepts of Python programming, which is a general-purpose programming language. After covering the basics, the course will show how students can use Python for simple text analysis. The course will then delve deeper and cover topics such as acquiring and cleaning data, and analyze the data using various statistical analysis modules that are available for Python. Students will work on independent short Python programming projects, as well as data analysis projects using Python.

**Offered:** As needed

**BAN 669. Project Management. 3 Credits.**

This course develops a foundation of concepts and solutions required for successful completion of a project. Topics include planning, scheduling, controlling, resource allocation and performance measurement.

**Offered:** As needed

**BAN 688. Business Analytics Independent Study. 3 Credits.**

**Offered:** Every year, All

**BAN 689. Business Analytics Independent Study. 1-6 Credits.**

**Offered:** Every year, All

**BAN 690. Business Analytics Capstone. 3 Credits.**

The capstone course in the MSBA program is designed to enable students to directly utilize what has been learned in the tools and applications courses to analyze and offer solutions for a major business challenge. A definition of the problem, analysis of options and a comprehensive presentation of findings and solutions are required components of the course.

**Prerequisites:** Take BAN 610, BAN 615, BAN 620, BAN 650, CIS 620, CIS 627, CIS 628.

**Offered:** Every year, Fall and Summer