BUSINESS ANALYTICS

Courses

BAN 210. Statistics for Business Analytics I. 3 Hours
This is the first of a two-course sequence in Statistics for Business Analytics which is required for all business majors. The purpose of these two courses is to introduce business students to the usefulness of statistics in solving business problems and making better managerial decisions. Students will be able to understand how the questions are derived and the data are collected given the problem context. The emphasis of BAN 210 is on the statistical techniques of collecting, measuring, analyzing, and summarizing data. This course deals with descriptive statistics followed by probability theory, probability distributions, sampling distributions and an introduction to one-sample inferential statistics. Prerequisites: MTH 129 or MTH 148 or MTH 168; BIZ 200 or BIZ 201 (may be taken as a corequisite).

BAN 211. Statistics for Business Analytics 2. 3 Hours
This is the second in a two-course sequence for business majors focused on the analysis of business data in support of business decisions. The purpose of these two courses is to introduce business students to the use of statistical techniques and risk analysis in business problem-solving and decision-making. The emphasis in this second course, BAN 211, is on five general topics: (1) understanding how the questions are derived and the data are collected given the problem context, (2) answering questions/testing claims about a business population using sample data, (3) answering comparison questions about two or more populations with sample data, (4) examining hypothesized relationships among two or more variables of a population based on sample data, and (5) storytelling the results of statistical analyses. Prerequisites: MTH 129 or MTH 148 or MTH 168; BIZ 200 or BIZ 201; DSC 210 or BAN 210.

BAN 302. Introduction to Programming for Analytics. 3 Hours
Programming and data wrangling using contemporary languages such as Python and R. Prerequisites: MIS 300 or MIS 301.

BAN 313. Advanced Statistics for Business Analytics. 3 Hours
Selected topics from advanced statistics with emphasis on business applications. Prerequisites: BAN 211, DSC 211, or equivalent.

BAN 402. Prescriptive Analytics. 3 Hours
Introduction to linear programming using contemporary languages such as Python and R. Prerequisites: BAN 302 or MIS 392.

BAN 482. Foundations of Machine Learning. 3 Hours
This course provides an introduction to predictive analytics in the context of business analytics, focusing on the application of machine learning techniques using programming languages such as R or Python. Introductions to contemporary topics such as data handling, linear regression, regression trees, classification methods, ensemble methods, dimensional reduction techniques, neural networks, time series analysis, and text mining are included. Prerequisites: BAN 302 and BAN 313.

BAN 495. Business Analytics Capstone. 3 Hours
This course centers on the execution of an experiential project applying business analytics concepts and techniques to practical problems with faculty supervision. Student teams address significant business problems and opportunities in service and manufacturing firms. Teams write recommendation/implementation reports and make presentations of their work. Students are guided to reflect about how their UD educational experience has influenced understanding of their major in terms of vocation. Prerequisites: BAN 302 or MIS 366 or MIS 385 or BAN 402 or BAN 482.

BAN 601. Business Principles for Analytics 1. 1.5 Hour
This introductory course, which is designed for MBAN students without a business degree, provides an overview of several business contexts / scenarios where analytics may be applied. Several functional areas of business are discussed and are drawn from Marketing, Finance, Management, Supply Chain Management, Information systems, and Accounting.

BAN 602. Business Principles for Analytics 2. 1.5 Hour
This introductory course, which is designed for MBAN students without a business degree, provides an overview of several business contexts / scenarios where analytics may be applied. The primary focus will be on the transformation function and highlight the integration with other business functions.

BAN 611. Statistical Analysis for Business Decisions. 1.5 Hour
This course is an introduction to descriptive and inferential statistics for MBA students. The overall purpose is for students to develop skills in (1) describing/summarizing sample data sets, (2) using probability distributions, (3) drawing conclusions about the properties of large groups when only sample information is available, and (4) investigating relationships among several properties based on a sample of those properties.

BAN 613. Supply Chain Analytics. 3 Hours
Overview of decision making in supply chain management. Problem solving steps and algorithms. Introduction to specialized data analytics software. Emphasis on predictive analytics. Prerequisites: BAN 611 or approval of department chair.

BAN 614. Introduction to Machine Learning. 3 Hours
Topics include programming in R, data manipulation and exploratory data visualization; predictive modeling using regression, decision trees, naive bayes, discriminant analysis; regularization and resampling methods; clustering and principal component analysis. Prerequisites: MBA 511 or MBA 611 or BAN 611; MIS 661A.

BAN 615. Case Studies in Analytics. 1.5 Hour
Selected cases illustrating the use of various analytics methods in descriptive, predictive, and prescriptive analytics to solve specific business problems. Prerequisites: BAN 791 or MBA 791.

BAN 616. Project Management for Professionals. 3 Hours
Project-oriented work makes up the bulk of managerial activity in organizations and consequently knowledge of project management principles is valued highly. This course offers a broad review of issues and approaches to contemporary professional project management useful for any MBA student and future manager. Prerequisites: BAN 611 or permission of instructor.

BAN 618. Advanced Business Analytics. 3 Hours
Techniques for the solution and analysis of various business problems. Types of models: linear programming, integer linear programming, network models, utility theory with risk attitude, dynamic programing, Monte Carlo simulation, and decision tree. Problem-oriented case studies. Emphasis on business insights, implications, and on analysis of the solution procedures. Use of modeling languages, such as Python, and commercial solvers. Prerequisite(s): MBA 791 or BAN 791, MIS 661A.

BAN 661A. Problem Solving Methods and Tools. 3 Hours
Overview of organizational decision making. Problem solving steps and algorithms. Introduction to programming. Introduction to specialized software for data analytics.

BAN 663. Business Analytics - Processes and Techniques. 1.5 Hour
Survey of the main phases of the life-cycle of analytics, including information requirements determination, data acquisition, analysis with descriptive, predictive, and prescriptive models, visualization, analysis presentation, and delivery. Hands-on practice with creating visualization and dashboards and with using data mining tools to analyze data. Prerequisites: BAN 611 or MBA 511 or MBA 611.

BAN 664A. Data Management for Analytics. 3 Hours
Phases in creating relational databases systems for collecting, storing, and extracting data for business analysis including use of the Structured Query Language (SQL). Data quality issues. Steps in creating and operating a data warehouse, including multi-dimensional modeling, extracting, transforming, and loading data for business analysis. Prerequisites: BAN 661A.

BAN 667A. Advanced Business Intelligence. 3 Hours
The role of business intelligence in setting and achieving organizational goals. How business intelligence supports different types of organizational decisions making. Tools and analytical methods for acquiring business intelligence, including statistical methods, data mining, visualizations, and programming for analytics. Methods and organizational structures for implementing business intelligence in own organization, including maturity assessments, roadmaps, and business intelligence excellence centers. Prerequisites: MIS 661 or BAN 661. Corequisites: MBA 663A or BAN 663.

BAN 668A. Special Topics in Data Analytics. 3 Hours
Selected advanced business intelligence and data analytics topics, e.g., big data, social network analysis, web (social media) analytics, text analytics, text scraping and others, as applied to business scenarios. Seminar-based or survey-based course. Project intensive. Prerequisites: MIS 661A or BAN 661A, MIS 664A or BAN 664A and MIS 667A or BAN 667A.

BAN 710. Capstone Project in Analytics. 3 Hours
Application of business analytics knowledge and skills with real-world projects or actual firms, student teams, project planning and implementation, presenting a management-style report of results and benefits. Prerequisites: BAN 614, BAN 618, MIS 667A, BAN 615 or MBA 615B.

BAN 791. Business Analytics. 1.5 Hour
The role of Business Analytics in providing support for business decisions, particularly an overall framework for analyses involving mathematical models. Emphasis on optimization and descriptive modeling utilizing analysis techniques such as linear programming, integer and binary programming, and simulation modeling. Focus on the application of such techniques to business decisions with cases. Use of spreadsheets (e.g., Excel) to implement analytic models. Prerequisites: MBA 511 or MBA 611 or BAN 611.