CORE COURSES

MSBC 5070 Survey of Business Analytics

The problems faced by decision makers in today's competitive business environment are often extremely complex and can be addressed by numerous possible courses of action. Evaluating these alternatives and gaining insight from past performance is the essence of business analytics. This course is designed as an introduction to Business Analytics, an area of business administration that considers the extensive use of data, methods, and fact-based management to support and improve decision making. While business intelligence focuses on data handling, queries and reports to discover patterns and generate information associated with products, services and customers, business analytics uses data and models to explain the performance of a business and how it can be improved. This course discusses the benefits of employing analytics and a structured approach to problem-solving in management situations.

MSBX 5415 Data Analytics

This course prepares students to lead in analytics-driven organizations. Students will explore the capabilities and challenges of data-driven business decision making. The course will include hands-on work with data and software. Topics to be covered include data manipulation, predictive analytics, decisions under uncertainty, and decision analytics tools (linear and nonlinear optimization). The class will be conducted with a combination of lectures, case discussions, lab sessions, a guest speaker, and student presentations. Grading will be based on several problem sets, case reports, and a final project.

MBAX 6330 Market Intelligence

This is a course about using data about customers and markets in business decision-making. This requires gathering, analyzing, and interpreting data about markets and customers. The course has been designed for managers who will be using market research, and so is intended for students wanting to go into marketing management, consulting, and entrepreneurship, real estate, or any job where one must understand, influence or predict demand. Students will learn about the sorts of marketing decision problems in which research information is most useful -- problems of target market selection, new product or service introduction, customer retention, pricing, etc. The focus is on business decisions and the use of data and data analysis to make better decisions rather than about the details of analysis. Objectives for the course are to learn how to:

- Define the decision problem and determine what information is needed
- Acquire trustworthy and relevant data and judge its quality
- Analyze data to make certain classic types of marketing decisions

MSBX 5405 Data Systems

This course explores both the functional and technical environment for the creation, storage, and use of the most prevalent source and type of data for business analysis, ERP and related structured data. Students will learn how to access and leverage information via SQL for analysis, aggregation to visualization, create dashboards, and be a source for business intelligence.

MSBX 5430 Advanced Statistical Analysis

Business applications involving multiple explanatory and response variables require advanced statistical models that go beyond the basic inferential tools (e.g., confidence intervals and hypothesis tests.) This course introduces the analyst to advanced multivariate regression analysis and residual diagnostics, logistic regression, analysis of variance (ANOVA and MANOVA), time series models, and analysis of categorical variables. R, an open source programming language for statistical computing and graphics, will be used. It is assumed students have mastery of introductory statistics topics including descriptive tools, inference, and ordinary least squares regression.

MSBX 5410 Analytics Lab

This lab exposes the students to commonly used platforms for statistical and predictive analytics. The class will go into depth of analytics using R before demonstrating the same concepts using SPSS and SAS. Students will learn to analyze large datasets, including textual analytics such as twitter-stream analysis using R. Class content will be coordinated with Fall term classes as much as possible, and will reinforce learning from other classes such as Structured Query Language (SQL). The class will cover exploratory, confirmatory, and predictive analytics and should ensure that students can be immediately useful in industry and during the BA Experiential Project.

MSBC 5490 Supervised Business Analytics Project

Based on an "action learning" model, the course is designed to provide hands-on analytics project management experience, amplified by shared experiences with other students. Exposes students to the multiple facets of business analytics at an executive level and integrates program coursework with this experience. While gaining first-hand experience, students are also adding value to the company by completing a project that draws on the skills gained through course work and educational experiences. Thus, this course serves two main learning objectives. First, it provides the opportunity to execute a project for a company, which will encourage the integration of course work and work knowledge, and providing a capstone experience. Second, it allows first hand exposure to the business analytics process through which students understand this process and the challenges associated with it.

ELECTIVE COURSES

MSBX 5420 Advanced Data Systems

This course moves the student beyond structured data and sources into business scenarios where data is semi-structured to unstructured such as those from social and web applications. Specific topics include introduction to SQL-on-Hadoop, NoSQL, and related distributing processing technologies. Students will learn practical application and mechanisms for getting this sort of data ready for analytics.

MBAX 6410 Process Analytics

This course covers the methods and means by which firms add value and compete by (re)designing their key processes. The course emphasizes operational planning as an important element of business process design. Topics include the design of customer service processes (focusing on cycle time reduction), manufacturing and logistics processes (emphasizing lead-time reduction and quality improvement), and the use of technology to support design activities. Graphical discrete-event simulation software is used to model and design business processes and to predict the effect of changes.

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MBAX 6843 Supply Chain and Operations Analytics

Analyzes key issues related to the design and management of operations and supply chains using quantitative tools such as linear, integer, and non-linear programming, regression, and statistical analysis. Covers important topics such as forecasting, aggregate planning, inventory theory, transportation, risk pooling, production control and scheduling, and facilities location, among others. Uses mathematical modeling, spreadsheet analysis, case studies, and pedagogical simulations to deliver material.

MBAX 6350 Digital Marketing

Digital marketing comprises all the things an organization does online to support its business. This can include displaying online advertising and participating in social media, but can also include online listening and monitoring, search engine optimization, and e-mail marketing. These approaches and other, nascent ones will be covered. Because this field is changing so quickly, the course emphasizes underlying principles of the tools as well as habits and resources for identifying new trends. Two themes that cut across the course topics are (1) linking strategy and tactics and (2) measuring results. The course has several hands-on components. Central to the hands-on orientation is a client project. In teams, students work with a local company on its digital marketing efforts. Options include search engine optimization, search engine ads, social media, e-mail campaigns, and defining mobile strategy.

MSBX 5310 Customer Analytics

This course will provide students with a deep understanding of customer centricity and its implications for the firm, state-of-the-art methods for calculating customer lifetime value and customer equity, the analytical and empirical skills that are needed to judge the appropriateness, performance, and value of different statistical techniques that can be used to address a issues around customer acquisition, development, and retention. Examples of statistical techniques include linear and logistic regression analysis, survival analysis, negative binomial regression analysis, and cluster analysis. Examples of managerial problems include forecasting the adoption of new products, projecting customer retention rates, and targeting marketing activities.

MBAX 6440 Project Management

Acquaints the student with multidisciplinary aspects of project management, including the relationship between schedule, cost, and performance. The course uses a hands-on project where the student interacts with a real customer, providing an opportunity to utilize the qualitative and quantitative tools taught in the classroom. At the conclusion of the course, the student may be eligible to apply for a project management certification from Project Management Institute based on previous work experience.

MSBX 5440 Decision Analysis

The course covers both behavioral/psychological aspects and analytical approaches to making decisions with multiple objectives. The focus is learning to frame decisions that involve multiple stakeholders with multiple objectives and then learning the various techniques used to evaluate the choices. Influence diagrams, decision heuristics using spreadsheets, and decision trees will all be explored with user-friendly decision tree software.

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