Full-Time MSBA Curriculum

Summer Semester: Business and Management Fundamentals

- Financial Accounting (3 credits)
- Introduction to Statistics for Data Scientists (3 credits)
- Analytics for Competitive Advantage (3 credits)
- Programming and Application Development (3 credits)
- Marketing Management (3 credits)

Fall Semester: Technical Fundamentals

- Data Management, Databases, and Data Warehousing (3 credits)
- Harvesting Big Data (3 credits)
- Project Management of Analytics Projects (1.5 credits)
- Building and Managing Teams (1.5 credits)
- Exploratory Data Analytics and Visualization (3 credits)
- Predictive Analytics (3 credits)

Spring Semester: Specialty Courses and Experiential Learning Projects

- Advanced Issues in Business Analytics (3 credits)
- Data-Driven Experimentation and Measurement (3 credits)
- Modeling and Heuristics for Decision Making and Support (3 credits)
- Experiential Learning (6 credits)
COURSE DESCRIPTIONS

Business/Management Fundamentals

• Analytics for Competitive Advantage (case- and discussion-based introduction to a variety of analytics-related issues and examples in business, including business value, impact, benefits and limitations, as well as ethical, legal, and privacy issues; use of case studies, examples, guest speakers.)
• Financial Accounting (Basic principles of financial accounting, involving the construction/interpretation of corporate financial statements.)
• Introduction to Statistics for Data Scientists (Concepts/ principles of business statistics, data analysis and presentation of results. Topics: exploratory data analysis, basic inferential procedures, statistical process control, time series/regression analysis, and analysis of variance. These methods are selected for their relevance to managerial decision making and problem solving.)
• Marketing Management (Management of the marketing function; understanding the basic foundational marketing concepts and skills in strategy development and planning of operational and strategic levels pertaining to product offering decisions, distribution channels, pricing and communication.)

Technical Fundamentals

• Programming and Application Development (fundamentals of structured and object-oriented programming in various application environments, development of web-based and mobile applications, programming for statistical and scientific computation)
• Data Management, Databases, and Data Warehousing (fundamentals of database modeling and design, normalization; extract, transform and load; data cubes and setting up a data warehouse; data pre-processing, quality, integration, and stewardship issues; advances in database and storage technologies)
• Harvesting Big Data (cloud computing and big data infrastructure; managing big-data, Hadoop, MapReduce; web crawling; data parsing; web data extraction using major application programming interfaces)
• Project Management of Analytics Projects (project management of full-stack analytics projects: identifying deliverables and a methodology; gathering requirements (use cases, user stories); estimating and staffing the project; monitoring project status (earned value and visual methods); team roles in an agile project)
• Building and Managing Teams (examine individual, group, and organizational aspects of team effectiveness; learn and practice basic skills central to team management; develop appreciation for team leadership function; learn the tools for effective team decision making and conflict management; develop general diagnostic skills for assessment of team issues within and across organizations and national boundaries)

Specialty Courses

• Exploratory Data Analytics and Visualization (fundamentals of data exploration; detecting relationships and patterns in data; cluster analysis, hierarchical and partition-based clustering techniques; rule induction from data; advances in multi-dimensional data visualization)
• Predictive Analytics (fundamentals of predictive modeling and data mining; assessing performance of predictive models; machine learning and statistical classification and prediction; logistic regression; decision trees, random forests; k-nearest neighbor techniques; naive Bayesian classifiers, neural networks)
• Advanced Issues in Business Analytics (analysis of unstructured data, fundamentals of text mining, sentiment analysis; fundamentals of network analysis, mining digital media and social networks, peer effects and social contagion models; personalization technologies and recommender systems)
• Data-Driven Experimentation and Measurement (controlled experiments in business settings, experiment design, A/B testing; specialized statistical methodologies; fundamentals of econometrics, instrument variable regression, propensity score matching)
• Modeling and Heuristics for Decision Making and Support (fundamentals of decision analysis, optimization, linear and integer programming, risk analysis, heuristics, simulation, decision technologies)

Capstone / Experiential Learning Experience

This involves hands-on application of the analytics methodologies, techniques, and tools learned throughout the program to a real-world problem (such as consulting for a real-world business client in the area of marketing, strategy, operation/supply chain, information technology, finance, accounting, or human resources) as well as the development and presentation of results, interpretations, insights, and recommendations.