

## COURSES

COD	COURSES
MSBA 533	Python Programing
MSBA 532	Advanced Methods for Analytics
MSBA 537	Data Warehousing
MSBA 534	Artificial Intelligence and Analytics for Managers
MSBA 538	Web and Social Analytics
MSBA 539	Data Mining
MSBA 540	Data Science
MSBA 543	Evidence-Based Management
MSBA 547	Measurement and Analysis for Business Decision Making
MSBA 548	Business and Economic Forecasting
MSBA 600	Business Analytics Capstone

In academic collaboration with  
The University of Texas at Arlington



## **PYTHON PROGRAMMING**

An introductory programming course that teaches students how to solve business problems using the scripting language, Python. Students will be exposed to object-oriented programming concepts, file handling, database access, and graphical user interfaces.

## **ADVANCED METHODS FOR ANALYTICS**

Advanced statistical learning for business analytics designed to prepare graduate students to become competent producers and consumers of predictive analytics and statistical information and to use evidenced based managerial decision making in their careers. They should be able to recognize the strengths and weaknesses of applicable techniques and when additional expertise is required. Topics include multiple regression, correlation, logistic regression, discriminant analysis, clustering, and classification and regression trees. It is strongly recommended that students who have no recent courses in statistics take **BSTAT 5301** prior to **BSTAT 5325**.

## **DATA WAREHOUSING AND BUSINESS INTELLIGENCE**

This course covers concepts, tools, and technologies associated with the design and implementation of data warehousing (DW) and business intelligence (BI) applications. Topics covered include data warehouse architecture and infrastructure, dimensional modeling, Extraction Transformation and Loading (ETL), On Line Analytical Processing (OLAP), data quality, and planning and implementation of a DW & BI application. The course objectives are met through a combination of lectures, class projects and homework assignments. Hands-on experience in developing and deploying a DW & BI application is provided.

## **PRINCIPLES OF BUSINESS DATA MINING**

This course will cover the foundations of business data mining. It will examine tools and techniques from the fields of machine learning and statistics used in practical data mining for finding, and describing, structural patterns in data. Topics may include: Knowledge representation and different types of data; Techniques for data pre-processing, cleaning, reduction, transformation, and visualization; Methods for Classification, Clustering, and Association Rules, including Decision Trees, Rules, Naive Bayes, k Nearest Neighbor, Neural Networks, Regression (linear & logistic), A-Priori, K-means, and hierarchical and density-based clustering; Performance evaluation of data mining algorithms using metrics. This course uses real world data sets and widely used statistical packages and programming languages.

## **AI AND ANALYTICS FOR MANAGERS**

Artificial Intelligence and Machine Learning (AI/ML) technologies offer new opportunities to analyze data, automate business processes, and transform business organizations. This course provides a broad overview of AI/ML technologies and their applications to solve business problems and support managerial decision making. Strategic and operational issues in deploying AI/ML technologies and creating a data-driven decision-making culture within the organization are discussed. A combination of classroom lectures and case analysis are used to provide a real-world perspective of operational and strategic issues related to development, deployment and management of AI/ML and data analytics technologies in business organizations.

## **DATA SCIENCE: A PROGRAMMING APPROACH**

The world is awash in data and companies are now trying to discern patterns and predict behaviors of both consumers and competitors to gain and sustain a competitive advantage. This course provides an in-depth understanding of data preprocessing/feature engineering as well as machine learning concepts and algorithms using Python. Students will receive hands-on training on supervised learning algorithms such as KNN, Naïve Bayes, Linear and Logistic Regression, Support Vector Machines, Decision Trees and Ensembles, and Artificial Neural Networks (ANNs). The course will also cover the foundations of Natural Language Processing (NLP), Social Network Analysis, and unsupervised learning algorithms such as K-Means, Hierarchical Clustering, t-SNE, and DBSCAN.

## WEB AND SOCIAL ANALYTICS

This course introduces the concepts, techniques, and tools of collecting and analyzing digital data on how users interface with an organization through the web and social media. The Internet and mobile technologies provide the vast sources of user data that describe or imply their behaviors, experiences, and attitudes. Analyzing these web (click) stream data and social media data serves the purposes of strengthening customer relationship management, improving online marketing (e.g. advertising, recommendation, pricing), and increasing the bottom line. The course will consist of lectures, case studies, hands-on exercises, and projects. Prerequisite: **BSTAT 5325** or equivalent.

## EVIDENCE-BASED MANAGEMENT

Evidence-based management is the process of translating principles and findings based on best evidence into organizational practice. This class covers the organizational and interpersonal sides of data and information. You will develop the skills and knowledge necessary to use data and analytics to inform management practice and make better decisions. Through case examples and classroom discussion you will learn skills in internal consulting, issue selling, data interpretation and presentation. While the focus is on the practical application of business intelligence, the skills learned in this course will allow all managers to make evidence-based decisions through data collection, analysis and presentation.

## MEASUREMENT AND ANALYSIS FOR BUSINESS DECISION-MAKING

This course provides students with a comprehensive overview of financial reporting, analysis and measurement issues in the context of business decision making. Student will gain an understanding of financial statements and their underlying measurements. They will then use this understanding to conduct analyses using financial ratios. Students will then explore the role of cost measurements, allocations, etc. in determining the performance measures of parts of the organization and their inter-relationship with both choosing and evaluating strategies in various business contexts. They will cover issues such as matching strategies to performance measures, choosing and evaluating key performance indicators and balanced scorecards, etc.

## BUSINESS & ECONOMIC FORECASTING

The course analyzes univariate and multivariate methods that allow users to capture patterns in data related to seasonality, trend and other random components to produce forecasts that are useful in virtually any business environment. Participants gain practical experience coding in relevant software. By the end of the course, students will be able to use statistical tools to critically assess the usefulness of alternative methods, which range from simple exponential smoothing to those that use machine learning.

## BUSINESS ANALYTICS CAPSTONE

This is a hands-on course that gives students an opportunity to apply their learning to real-world problems. Students will draw on their repertoire of analytical skills to work on one or more challenging projects. In-class discussions will include advanced topics in AI, Machine Learning, NLP, and other contemporary technologies. In addition to preparing a detailed report, students will present their findings to faculty and/or members of the business community. The course places considerable emphasis on problem-solving as well as on written and oral communication skills.