

BUSINESS ANALYTICS (BAX)

Graduate School of Management

BAX 400 – Foundations of Analytics (4 units)

Course Description: Focuses on teaching the fundamentals of R and SQL. Introduces the topic of numerical optimization, and review the concepts of linear algebra and calculus.

Learning Activities: Lecture 3 hour(s).

Grade Mode: Letter.

BAX 401 – Information, Insight & Impact (4 units)

Course Description: Introduction to the process of analyzing raw data to gain profitable business insight. Applications selected across organizational functions include prediction, process improvement, and general operational decision-making.

Learning Activities: Lecture 4 hour(s).

Grade Mode: Letter.

BAX 402 – Organizational Issues in Implementing Analytics (3 units)

Course Description: Review the evolution of analytics in business, how to assemble and manage analytics teams, and the decision life-cycle. Emphasis on structuring communications to improve buy-in from peers and non-quantitatively-inclined colleagues.

Learning Activities: Lecture 3 hour(s).

Grade Mode: Letter.

BAX 403 – Organizational Effectiveness Workshop (2 units)

Course Description: Examine leadership, communication, and project management within the business, legal and societal contexts in which analytics is applied. Emphasis on privacy, data security, responsibility, and ethics.

Learning Activities: Lecture 2 hour(s).

Grade Mode: Letter.

BAX 411 – Problem Structuring (2 units)

Course Description: Synthesize data-rich business challenges using analytic frameworks and techniques for modeling business problems. Emphasis on modeling uncertainty, optimizing multiple criteria, and building consensus.

Learning Activities: Lecture 2 hour(s).

Grade Mode: Letter.

BAX 421 – Data Management (2 units)

Course Description: Introduction to the extraction, assembly, storage and organization of data in IT systems.

Learning Activities: Lecture 2 hour(s).

Grade Mode: Letter.

BAX 422 – Data Design & Representation (2 units)

Course Description: Introduction to business applications involving standard, streaming, and network data. Emphasis on scalable technologies for processing and analyzing big data for diverse applications.

Learning Activities: Lecture 2 hour(s).

Grade Mode: Letter.

BAX 423 – Big Data (4 units)

Course Description: Learn computational reasoning about data representations by mapping conceptual data models to relational structures and analyzing database architectures and design trade-offs.

Learning Activities: Lecture 4 hour(s).

Grade Mode: Letter.

BAX 424 – Analytics for Logistics & Supply Chain Management (2 units)

Course Description: Introduction to various optimization methods in the domain of logistics and supply chains.

Learning Activities: Lecture 2 hour(s).

Enrollment Restriction(s): Open to students in Master of Business Analytics (MSBA) program only.

Grade Mode: Letter.

BAX 431 – Data Visualization (2 units)

Course Description: Extract insights using visualization tools in R, Python, ManyEyes, HTML/CSS, etc. Standard (histograms, boxplots, and dashboards) and specialized (3D, animation, word clouds) formats are covered.

Learning Activities: Lecture 2 hour(s).

Grade Mode: Letter.

BAX 441 – Statistical Exploration & Reasoning (4 units)

Course Description: Introduction to statistical reasoning and inference extraction from large data-sets. Learn to obtain preliminary insights and form initial hypotheses through exploratory data analysis (EDA).

Learning Activities: Lecture 4 hour(s).

Grade Mode: Letter.

BAX 442 – Advanced Statistics (4 units)

Course Description: Continue exploring statistical reasoning using maximum likelihood estimation, Bayesian models, nonparametric models, Monte Carlo Markov Chain, time series, model specification, model selection, and dimension reduction.

Learning Activities: Lecture 4 hour(s).

Grade Mode: Letter.

BAX 443 – Analytic Decision Making (4 units)

Course Description: Using spreadsheets and specialized modeling tools, explore structured problem solution through meta-heuristics, Monte Carlo simulation, and mathematical optimization.

Learning Activities: Lecture 4 hour(s).

Grade Mode: Letter.

BAX 452 – Machine Learning (4 units)

Course Description: Construct algorithms for learning from data and analyze the process for deriving business intelligence. Coverage of supervised and unsupervised learning, neural networks, etc.

Learning Activities: Lecture 4 hour(s).

Grade Mode: Letter.

BAX 453 – Application Domains (2 units)

Course Description: Explore contemporary and emerging domains for high-yield applications of analytics. Topics: social network analytics, search analytics, health care analytics, Internet of things, supply chain/operations analytics, and marketing analytics.

Learning Activities: Lecture 2 hour(s).

Grade Mode: Letter.

BAX 461 – Practicum Initiation (2 units)

Course Description: Students form teams, scope their project in light of team capability and business opportunity, create a preliminary structure and solution approach for the core problem, and assess data quality and project risks.

Learning Activities: Lecture 2 hour(s).

Grade Mode: Letter.

BAX 462 – Practicum Elaboration (2 units)

Course Description: Building on problems chosen in BAX 461, teams refine the business opportunity and draw insights from exploratory data analysis.

Learning Activities: Lecture 2 hour(s).

Grade Mode: Letter.

BAX 463 – Practicum Analysis & Implementation (2 units)

Course Description: Focus on completing project deliverables by polishing statistical and non-statistical quantitative analysis, generating insights for technical and business stakeholders, integrating proposed solutions into partner workflows and organizations, and disseminating the findings and outcomes through presentations and publications.

Learning Activities: Lecture 2 hour(s).

Grade Mode: Letter.

BAX 464 – Practicum Implementation (2 units)

Course Description: Project teams complete analysis, plan deployment and obtain client buy-in. Culminates in a project presentation, preferably including representatives from the client organization.

Learning Activities: Lecture 1 hour(s), Project, Term Paper, Discussion.

Grade Mode: Letter.

BAX 493 – People Analytics (2 units)

Course Description: Students develop an understanding of how to position themselves as strategic partners in a company's talent management efforts. Explore a range of topics related to people analytics, including hiring and selection, performance evaluation, training/development, promotion, compensation, social networks, diversity, and retention.

Learning Activities: Lecture 2 hour(s).

Enrollment Restriction(s): Open to students enrolled in the Masters in Business Analytics Program only.

Grade Mode: Letter.

BAX 493A – Topics in Business Analytics (2 units)

Course Description: Advanced topics in Business Analytics. Varied topics to cover issues more extensively discussed in the program core or current interest topics in the fields of business, data, analytics, and implementation.

Learning Activities: Lecture 2 hour(s).

Enrollment Restriction(s): Open to students enrolled in the MSBA program only.

Repeat Credit: May be repeated when topic differs.

Grade Mode: Letter.

BAX 493B – Topics in Business Analytics– Implementing Machine Learning on the Cloud (1 unit)

Course Description: Covers the four layers of Machine Learning in the cloud: AI services, ML services, ML Engines & Frameworks, and Infrastructure & Serverless Environments and how to implement solutions on all of the layers by using the best abstraction for the task at hand.

Learning Activities: Lecture 1 hour(s).

Enrollment Restriction(s): Open to students enrolled in the MSBA program only.

Grade Mode: Letter.