BUSINESS ANALYTICS (BAN)

BAN 530: Business Strategies for Data Analytics

3 Credits

Data analytics problem-solving strategies applied to a real-world business context. BAN 530 Business Strategies for Data Analytics (3) BAN 530 integrates the descriptive/prescriptive/predictive framework for business analytics courses and sets analytics problem solving in a real-world business context. The objective is to provide students with experience with noisy data sets, potential compliance issues, non-standard measures across business units, and other real-world considerations in using data to drive decisions. The course will examine the entire life cycle of a data analytics project, from data origination through collection, filtering, tool selection, calculation, and communication. Particular emphasis will be placed on problem formulation: identifying what the business issue is at hand, what data might be useful in understanding that issue, and what tools can be most usefully applied in a particular context. In addition, communication skills will be emphasized: how data informs the decision-making process when the audience likely lacks the specialized quantitative literacy of the project team. Other important considerations include many facets of information privacy: students will consider the ethical and legal implications of de-anonymization, of deep insight into individual behavior, and of opt-in versus opt-out models of participation.

BAN 540: Data Mining for Business

3 Credits

Intended for recent graduates with little to no professional experience, BAN 540 develops business students’ understanding of and ability to apply a variety of data mining tools and techniques for use in detecting and exploiting patterns and relationships in large structured and unstructured data sets derived from a variety of business scenarios. Students will explore the use of cluster analysis, classification, association, and cause-and-effect modeling techniques to explore and reduce data, classify new data elements, identify natural associations among variables, create rules for target marketing or buying recommendations, and describe relationships among data that motivate business performance. Specific techniques may include k-nearest neighbor, discriminant analysis, and association rule mining. Students will learn how to bridge descriptive and predictive analytics across a variety of business scenarios. Coursework includes individual assignments intended to develop confidence with basic data mining techniques, followed by case-based problems that challenge students’ creativity and data mining mastery in search of patterns and data relationships leading to useful business insights. While underlying theory will be discussed, the course will prepare business analysts by focusing specifically on data mining applications in marketing, finance, supply chain management, and other business areas, with an emphasis on the unique aspects of decision making in a business environment. Software packages, concepts, and business applications will vary and evolve to keep pace with technology, theory, and instructor interest.

BAN 550: Prescriptive Analytics for Business

3 Credits

Development of methods for prescriptive analytics with a focus on business supply side decisions and risk mitigation. BAN 550 Prescriptive Analytics for Business (3) Analytics, defined as the scientific process of using data and quantitative techniques to make better decisions, has permeated virtually all aspects of business. The widespread availability of large amounts of detailed data combined with analytics methods permits an extensive examination of the tradeoffs that inform business decision making, with the ultimate goal of choosing “best” courses of action. BAN 550 explores the use of prescriptive analytics methods in a variety of business contexts. In the early part of the course, the focus is on the tools and methods of prescriptive analytics. As the course progresses the emphasis shifts to the effective integration and implementation of prescriptive analytics in supply-side decision making processes such as supply chain management, service management, operations, logistics and transportation. The applications areas within business will reflect the interests of the instructors and will evolve as new areas of theory and practice develop.

Prerequisite: BAN 540

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BAN 840: Predictive Analytics for Business

3 Credits

BAN 840 explores the use of predictive analytics tools and techniques throughout a wide range of business scenarios and problems. Initially focusing on the application of traditional predictive analytics techniques to answer the question, "What will happen in the future?", the course provides opportunities for students to apply regression and forecasting techniques to data from various business contexts to inform business leaders' decision. Later, students explore various software applications and techniques for acquiring, preparing, and analyzing "big data", recognizing and taking advantage of the exponential growth in the amount of structured and unstructured data generated by and available to businesses. The course next examines cutting-edge techniques gaining increased attention among analytics experts, including data mining, text analytics, and social media analytics. Finally, students will be given an overview of the future of predictive analytics, developing an awareness of artificial intelligence and machine learning concepts, such as neural networks, to help them advance their organizations' business analytics capabilities. Software packages, concepts, and business applications will vary and evolve to keep pace with technology, theory, and instructor interests.

Recommended Preparations: BAN 530

BAN 888: Implementing Analytics for Business

3 Credits

Sets business analytics in real-world context. Explores project life cycle from business problem framing to model lifecycle management. BAN 888 Implementing Analytics for Business (3) The capstone course for the Business Analytics option in the Data Analytics MPS degree program, this course sets analytics problem solving in a real-world context, including communication to non-statistically trained executives. Key topical areas are derived from the common activities of the business analyst and include business problem framing, analytics problem framing, data sourcing, cleaning and integration, analysis methodology selection, model building, model deployment and model lifecycle management including benefit assessment. Topics align with the body of knowledge in the Institute for Operations Research and the Management Sciences (INFORMS) Certified Analytics Professional Study Guide. Students explore each topic in a real world context, by developing solutions to cases in a team setting. Each team selects a case and works through all elements of the analytics body of knowledge, with group presentations on problem framing, analytics model selection and development, and model lifecycle management in a business setting.

Prerequisite: BAN 530 and BAN 550