

BUSINESS ANALYTICS (BA)

BA 24056 BUSINESS ANALYTICS I 3 Credit Hours

(Equivalent to BMRT 21004) Introduction to concepts in statistical methods and their applications to real world problems. Examines both the theoretical and practical side of the different methods.

Prerequisite: MATH 11010 or MATH 11012 or MATH 12002.

Schedule Type: Laboratory, Lecture, Combined Lecture and Lab

Contact Hours: 2 lecture, 2 lab

Grade Mode: Standard Letter

BA 34055 COMPUTER DECISION MODELING 3 Credit Hours

Introduces students to the scientific decision-making tools of operations research and management science, and also to the use of spreadsheet modeling for problem formulation and solution without the need for mathematics. The concepts of modeling and better decision making are stressed along with illustrations from the various functional areas of business. Course not open to computer information systems majors.

Prerequisite: CIS 24053 or IT 11000; and BA 24056 or MATH 10041 or BMRT 21004; and minimum 2.000 overall GPA.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 34059 SERVICE OPERATIONS MANAGEMENT 3 Credit Hours

Provide students with the concepts and tools necessary to effectively manage service operations and to prepare students for management opportunities in service firms that represent the fastest-growing sector of the economy. The service management will be presented from an integrated viewpoint with a focus on customer satisfaction. The course materials are organized around four modules (1) understanding services (2) designing the service enterprise, (3) managing service operations and (4) toward world class-service.

Prerequisite: BA 34060; and minimum 2.000 overall GPA.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 34060 OPERATIONS MANAGEMENT 3 Credit Hours

A survey course in operations management that covers the managerial concepts and the quantitative tools used in the design, planning operation and control of operations systems.

Prerequisite: CIS 24053 or IT 11000; and BA 24056 or MATH 10041 or BMRT 21004.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 34064 MANUFACTURING RESOURCE PLANNING 3 Credit Hours

Introduce students to the basic tools operations managers use to inform their decisions on a daily basis. The course involves hands-on coverage of manufacturing resource planning tools, including forecasting and master production schedules, bill of materials structuring, order entry and purchasing, capacity requirements planning, routing, costing, customer service, shipping, invoicing and using an enterprise resource planning (ERP) software.

Prerequisite: BA 34060; and minimum 2.500 overall GPA.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 34065 QUALITY ASSURANCE 3 Credit Hours

Introduction to importance of quality assurance and tools used to accomplish better quality in goods and services. Topics TQM, Six Sigma, quality philosophies, sampling plans and statistical process control, ISO, quality competition and awards.

Prerequisite: BA 34060; and minimum 2.000 overall GPA.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 34156 BUSINESS ANALYTICS II 3 Credit Hours

This course provides an introduction and application of business analytics to real-world problems. Specifically, students are exposed to methods and models that allows business users to make better decisions based on data. We discuss methods for collecting, cleaning, and visualizing data, linear, non-linear and optimization models to help decision makers choose the best decision, and some advanced forms of modeling. The goal of this course is for students to be exposed to essential topics in business analytics and to apply these techniques to real-world problems.

Prerequisite: BMRT 21004 or MATH 10041 or BA 24056.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 44011 SYSTEMS SIMULATION 3 Credit Hours

(Slashed with BA 54011) Techniques and applications of computer simulation of existing or proposed real-world systems. Use of simulation language, simulations studies, analysis and interpretation of results.

Prerequisite: BA 24056 or MATH 10041.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 44050 DATA VISUALIZATION 3 Credit Hours

(Slashed with BA 54050) Introduces students to data visualization, and specifically, how to use visualization to communicate information effectively from data. All aspects of effective data visualization, including understanding the context, choosing appropriate graphs and visuals, and communicating the information from data will be considered. While theoretical aspects of effective visualizations will be covered, the focus will be on implementing such designs. Concentrating significantly on the practice of effective visualizations.

Prerequisite: BA 24056 or MATH 10041; and senior standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 44051 MACHINE LEARNING 3 Credit Hours

Machine Learning is one of the required courses for the Bachelor of Business Analytics (BANA) program. In this course, students learn the fundamentals of machine learning as applied to business problems. Specifically, the course concentrates on regression and classification methods, including regression, random forests, boosting trees, and neural networks, on unsupervised learning including k-means and hierarchical clustering, and on recommendation systems, and ensemble learning.

Prerequisite: BA 34156; and senior standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 44061 OPERATIONS MANAGEMENT AND CONTROL 3 Credit Hours

Introduces the student to the key functions of an operations planning and control system. Operations planning and control systems provide information for the efficient flow of materials, the effective utilization of people and equipment and the proper coordination of internal activities with suppliers and customers.

Prerequisite: Minimum 2.000 overall GPA.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 44062 SUPPLY CHAIN MANAGEMENT 3 Credit Hours

Students learn the basic analytical tools needed to coordinate business operations across the value chain. Course involves hands-on coverage of supply chain management with emphasis on supplier partnering and development, customer relations management, strategic sourcing and pricing, e-business, measuring supply chain performance, mass customization, planning supply and demand coordination in the supply chain.

Prerequisite: Minimum 2.000 overall GPA; and junior standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 44065 STRATEGIES IN PRODUCTION AND OPERATIONS MANAGEMENT (WIC) 3 Credit Hours

Senior project in industrial management. Applies concepts from all prior coursework to the solution of real and simulated operating problems.

Prerequisite: Minimum 2.000 overall GPA.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

Attributes: Writing Intensive Course

BA 44099 CAPSTONE IN BUSINESS ANALYTICS (ELR) (WIC) 3 Credit Hours

In this culminating project, students draw on the breadth and depth of the curriculum to address an industry supplied problem individually or in small teams. Specifically, students will improve, and present their solutions to their respective stakeholders, who will grade your final presentation and report.

Prerequisite: BA 44051; and senior standing.

Pre/corequisite: BA 44050.

Schedule Type: Lecture, Project or Capstone

Contact Hours: 3 lecture

Grade Mode: Standard Letter

Attributes: Experiential Learning Requirement, Writing Intensive Course

BA 44152 PROJECT MANAGEMENT 3 Credit Hours

This course covers the fundamental concepts, procedures and processes related to managing projects from initiation through planning, execution and closing. It also introduces the principles, tools and methods used in project management, and the use of project management software (ProjectLibre) in managing projects. The topics covered in the course can be helpful in preparing for Project Management Professional (PMP) certification.

Prerequisite: Minimum 2.000 overall GPA; and junior standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 54011 SYSTEMS SIMULATION 3 Credit Hours

(Slashed with BA 44011) Techniques and applications of computer simulation of existing or proposed real-world systems. Use of simulation language, simulations studies, analysis and interpretation of results.

Prerequisite: Graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 54050 DATA VISUALIZATION 3 Credit Hours

(Slashed with BA 44050) Introduces students to data visualization, and specifically, how to use visualization to communicate information effectively from data. All aspects of effective data visualization, including understanding the context, choosing appropriate graphs and visuals, and communicating the information from data will be considered. While theoretical aspects of effective visualizations will be covered, the focus will be on implementing such designs. Concentrating significantly on the practice of effective visualizations.

Prerequisite: Graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64005 ANALYTICS FOR DECISION MAKING 2 Credit Hours

(Slashed with BA 74005) This course uses computer capabilities to analyze and understand a variety of statistical and business analytics techniques and how to apply these techniques to solving business problems.

Prerequisite: Graduate standing.

Schedule Type: Lecture

Contact Hours: 2 lecture

Grade Mode: Standard Letter

BA 64013 NONPARAMETRIC AND ROBUST STATISTICS 3 Credit Hours

(Slashed with BA 74013) A presentation of statistically sound techniques for those who need to be able to use nonparametric or robust methods to deal with non-normal distributions or outliers (common problems) in their data.

Prerequisite: BA 64005 or BA 74005; and graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64017 MULTIVARIATE STATISTICS 3 Credit Hours

This course is devoted to a study of multivariate statistical methods. Topics include multivariate analysis of variance, canonical correlation, principal component analysis, discriminant analysis cluster analysis and factor analysis.

Prerequisite: BA 64023 or BA 74023; and graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64018 QUANTITATIVE MANAGEMENT MODELING 3 Credit Hours

(Slashed with BA 74018) A variety of optimization and heuristic modeling techniques are explored. Decision-making environments, model selection, and interpretation are emphasized. Various linear and nonlinear mathematical programming techniques are the primary topic but are supplemented with other optimization and heuristic techniques.

Prerequisite: Graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64019 RESEARCH SEMINAR IN SUPPLY CHAIN MANAGEMENT 3 Credit Hours

(Slashed with BA 74019) Research seminar designed primarily for students who seek an in-depth understanding of the current research literature in supply chain management and who are interested in doing research in supply chain management. Students study the academic literature with emphasis on the development and use of analytical tools and models to solve supply chain management problems. Specifically, the course will address quantitative modeling to support operational, tactical and strategic decision-making in supply chain management.

Prerequisite: Graduate standing.

Schedule Type: Seminar

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64020 ADVANCED STATISTICAL MODELS 3 Credit Hours

(Slashed with BA 74020) This is a special focus course for which the topics will vary. It will generally include sampling techniques, experimental designs, similar statistical methods, internal and external validity and reliability issues.

Prerequisite: BA 64023 or BA 74023; and graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64023 LINEAR STATISTICAL MODELS AND APPLICATIONS 3 Credit Hours

(Slashed with BA 74023) Models and applications of simple and multiple regression, correlation and analysis of variance.

Prerequisite: BA 64005 or BA 74005; and graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64026 GLOBAL SUPPLY CHAIN MANAGEMENT AND SUSTAINABLE STRATEGIES 3 Credit Hours

Introduces the knowledge base needed to coordinate business operations across global supply chains. Addresses how to integrate traditional business operations so as to align them in support of inter-firm collaboration required to compete globally. Investigates specific topics relevant to supply chain management and offers a managerial orientation towards supporting global supply chain operations. Immerses students into responsible supply chain practices around the globe with strong emphasis and orientation towards sustainable (green) supply chains.

Prerequisite: Graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64028 GLOBAL SUPPLY CHAIN BUSINESS MODELS 3 Credit Hours

Focus on modeling techniques for supporting decision making in supply chain management. Introduces students to the problems facing a global supply chain manager and the implementation of spreadsheet-based models for solving problems that arise in the operation of a supply chain. Emphasis is placed on model formulation and interpretation in support of decisions to coordinate and improve supply chain operations.

Prerequisite: BA 64026 or BA 64036; and graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64029 SUPPLY CHAIN AND VENDOR MANAGEMENT STRATEGIES 3 Credit Hours

Building global "relationships" are central pillars to effective supply chain management. There are strategic relationships, tactical relationships, transactional relationships, internal relationships, and of course, relationships with the government. As supply chains become global, managers have to consider cultural, regulatory, and communication differences to create and operate within the global village. Students learn how to deal with a rapidly changing landscape and understand how to deal with distributed resources, vendors, and people across cultures and convictions.

Prerequisite: BA 64026; and graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64036 BUSINESS ANALYTICS 3 Credit Hours

Overview of business analytics and its appropriate applications in various industries and functional areas. Critical thinking, problem definition, problem solving, effective communication, and leadership are emphasized. Methods such as data visualization and descriptive, predictive, and prescriptive analytics are covered from a broad perspective. This course is applied, hands-on, and case-based. Cases emphasize the communication of quantitative solutions to laypeople and required leadership during decision-making and implementation stages.

Prerequisite: Graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64037 ADVANCED DATA MINING AND PREDICTIVE ANALYTICS 3 Credit Hours

Course extends the coverage of data mining and predictive analytics. Topics focus on the applied use of these techniques in realistic settings. Covers statistical and machine learning techniques.

Prerequisite: BA 64036 or BA 64060; and graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64038 ANALYTICS IN PRACTICE 3 Credit Hours

Course focuses on supporting techniques and managerial and professional skills necessary to being an effective business analyst. Other topics include project management, requirements analysis, change management, team dynamics, leadership, ethics and effective communication between all stakeholders.

Prerequisite: Graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64041 OPERATIONS, SERVICE AND SUPPLY CHAIN MANAGEMENT 2 Credit Hours

Develops a framework for analysis of operating problems. Uses computer, quantitative and behavioral models to develop operating plans consistent with organizations' competitive (or service) strategy.

Prerequisite: BA 64005; and graduate standing.

Schedule Type: Lecture

Contact Hours: 2 lecture

Grade Mode: Standard Letter

BA 64047 MANUFACTURING TECHNOLOGY AND STRATEGY 3 Credit Hours

(Slashed with BA 74047) This course provides the student with an introduction to modern techniques in manufacturing and the necessary strategic concepts to implement them. A similar discussion of service industries is also included.

Prerequisite: Graduate standing; and special approval of instructor.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64060 FUNDAMENTALS OF MACHINE LEARNING 3 Credit Hours

In this course, students learn fundamentals of machine learning. Specifically, concentrating on classification modelling, segmentation and clustering and recommendation systems.

Prerequisite: Graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64061 ADVANCED MACHINE LEARNING 3 Credit Hours

Introduction to deep learning and time series data analysis. Students consider applications of deep learning to computer vision, text analysis and sequences, and time series data.

Prerequisite: BA 64060; and graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64082 DATABASE MANAGEMENT AND DATABASE ANALYTICS 3 Credit Hours

(Slashed with BA 74082) The design, implementation and management of database management systems within organizations are studied from an applied perspective. Additional emphases include data warehousing, structured query language for analytics and introductions to NoSQL databases and big data analytics.

Prerequisite: Graduate standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 64092 INTERNSHIP IN BUSINESS ANALYTICS 3 Credit Hours

(Repeatable for credit) A supervised field experience at a cooperating organization. Requires regular contact with instructor and preparation of an internship report connecting academic coursework to on-the-job experiences.

Prerequisite: Graduate standing.

Schedule Type: Practical Experience

Contact Hours: 9 other

Grade Mode: Standard Letter

BA 64099 CAPSTONE PROJECT IN BUSINESS ANALYTICS 3 Credit Hours

(Repeatable for credit) In this culminating project, students draw on the breadth and depth of the curriculum to address an industry supplied problem individually or in small teams. Projects will explore prescriptive analytics as is appropriate to their design project.

Prerequisite: BA 64036 or BA 64060; and graduate standing.

Schedule Type: Project or Capstone

Contact Hours: 3 other

Grade Mode: Standard Letter-IP

BA 74005 STATISTICS FOR MANAGEMENT I 3 Credit Hours

(Slashed with BA 64005) This course uses computer capabilities to use and understand a variety of statistical techniques and applies these techniques to business problems.

Prerequisite: Admission to MBA program; and doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74013 NONPARAMETRIC AND ROBUST STATISTICS 3 Credit Hours

(Slashed with BA 64013) A presentation of statistically sound techniques for those who need to be able to use nonparametric or robust methods to deal with non-normal distributions or outliers (common problems) in their data.

Prerequisite: BA 64005 or BA 74005; and doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74017 MULTIVARIATE STATISTICS 3 Credit Hours

(Slashed with BA 64017) This course is devoted to a study of multivariate statistical methods. Topics include multivariate analysis of variance, canonical correlation, principal component analysis, discriminant analysis, cluster analysis and factor analysis.

Prerequisite: BA 64023 or BA 74023; and doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74018 QUANTITATIVE MANAGEMENT MODELING 3 Credit Hours

(Slashed with BA 64018) A variety of optimization and heuristic modeling techniques are explored. Decision-making environments, model selection, and interpretation are emphasized. Various linear and nonlinear mathematical programming techniques are the primary topic but are supplemented with other optimization and heuristic techniques.

Prerequisite: Doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74019 RESEARCH SEMINAR IN SUPPLY CHAIN MANAGEMENT 3 Credit Hours

(Slashed with BA 64019) Research seminar designed primarily for students who seek an in-depth understanding of the current research literature in supply chain management and who are interested in doing research in supply chain management. Students study the academic literature with emphasis on the development and use of analytical tools and models to solve supply chain management problems. Specifically, the course will address quantitative modeling to support operational, tactical and strategic decision-making in supply chain management.

Prerequisite: Doctoral standing.

Schedule Type: Seminar

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74020 ADVANCED STATISTICAL MODELS 3 Credit Hours

(Slashed with BA 64020) This is a special focus course for which the topics will vary. It will generally include sampling techniques, experimental designs, similar statistical methods, internal and external validity, and reliability issues.

Prerequisite: BA 64023 or BA 74023; and doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74023 LINEAR STATISTICAL MODELS AND APPLICATIONS 3 Credit Hours

(Slashed with BA 64023) Models and applications of simple and multiple regression, correlation and analysis of variance.

Prerequisite: BA 64005 or BA 74005; and doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74037 ADVANCED DATA MINING AND PREDICTIVE ANALYTICS 3 Credit Hours

(Slashed with BA 64037) Course extends the coverage of data mining and predictive analytics. Topics focus on the applied use of these techniques in realistic settings. Covers statistical and machine learning techniques.

Prerequisite: Doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74041 OPERATIONS MANAGEMENT 3 Credit Hours

Develops a framework for analysis of operating problems. Uses computer quantitative and behavioral models to develop operating plans consistent with organizations' competitive (or service) strategy.

Prerequisite: BA 64005 or BA 74005; and doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74047 MANUFACTURING TECHNOLOGY AND STRATEGY 3 Credit Hours

(Slashed with BA 64047) This course provides the student with an introduction to modern techniques in manufacturing and the necessary strategic concepts to implement them. A similar discussion of service industries is also included.

Prerequisite: Doctoral standing; and special approval of instructor.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74061 ADVANCED MACHINE LEARNING 3 Credit Hours

(Slashed with BA 64061) Introduction to deep learning and time series data analysis. Students consider applications of deep learning to computer vision, text analysis and sequences and time series data.

Prerequisite: Doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 74082 DATABASE MANAGEMENT AND DATABASE ANALYTICS 3 Credit Hours

(Slashed with BA 64082) The design, implementation and management of database management systems within organizations are studied from an applied perspective. Additional emphases include data warehousing, structured query language for analytics and introductions to NoSQL databases and big data analytics.

Prerequisite: Doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 84011 SYSTEMS SIMULATION 3 Credit Hours

Techniques and applications of computer simulation of existing or proposed real-world systems. Use of simulation language, simulation studies, analysis of interpretation and of results.

Prerequisite: Doctoral standing; and special approval.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 84012 SCHEDULING AND PLANNING 3 Credit Hours

Course is a doctoral seminar on scheduling and planning models that are used in operations and production management. The goal is to expose students to a portfolio of scheduling and planning models to stimulate research ideas in scheduling and planning models that will lead to the development of a research program for your doctoral research.

Prerequisite: Doctoral standing in the Ambassador Crawford College of Business and Entrepreneurship.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 84015 STOCHASTIC MODELS 3 Credit Hours

Mathematical modeling of systems involving one or more random variables, and stochastic processes: basic probability theory; Poisson process, Markov chain and Markov process with applications to production, inventory, reliability and queuing systems.

Prerequisite: Doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 84023 LINEAR STATISTICAL MODELS 3 Credit Hours

Linear statistical models for regression and analysis of variance.

Prerequisite: Doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter

BA 84047 VALUE AND SUPPLY CHAIN MANAGEMENT 3 Credit Hours

This course is a doctoral seminar for students who seek an in-depth understanding of the current research literature in supply chain management. The seminar is designed into three modules. The first module covers the conceptual foundation for understanding value and supply chains from an interdisciplinary perspective. The second module focuses on the basis of supply chain modeling using optimization and simulation. The third module serves to integrate the previous modules with the objective of the student producing a research paper for journal submission.

Prerequisite: Doctoral standing.

Schedule Type: Lecture

Contact Hours: 3 lecture

Grade Mode: Standard Letter