BUSINESS SYSTEMS & ANALYTICS (BSA)

BSA 302 Applied Regression Modeling and Visualization
This course is a data-driven, applied course focusing on the analysis of data using regression models and visualization techniques. It emphasizes applications to the analysis of business data and makes extensive use of computer statistical packages. Topics include simple and multiple linear regression, residual analysis and other regression diagnostics, model selection, classification (logistic regression), exploratory graphic techniques in modeling, and design principles for creating meaningful displays of data to facilitate decision making. All topics are illustrated on real-world data sets obtained from various disciplines to include accounting, finance, management, sales and marketing, operations, and risk management. Prerequisite(s): BUS 202 or equivalent

BSA 305 Sports Analytics
This course introduces students to the application of data science and analytics in sports. Students are familiarized with the descriptive, predictive, and prescriptive analytical tools and techniques for on-field performance and off-field business decisions. Topics include but are not limited to player performance evaluation, training, selection, and acquisition; team formation, evaluation, and management; and in-game strategy. Students form interdisciplinary teams and work sports data on a group project in a sport of their choice. Prerequisite(s): BUS 202 or equivalent

BSA 350 Cooperative Education (Junior Standing)
This is a full-time, paid, approximately four-month assignment in a cooperating firm. Involves job-related learning under faculty supervision.The position must be approved by the Business Systems and Analytics Department. For registration information, students in the Business Scholars Co-op Program should consult with the Director of the program, and students who are not in the Business Scholars Program should consult with the Associate Director for Experiential Education in Career Services. A co-op counts as a free elective and not as a course in the major. Grading for co-ops is on a pass/fail basis (grading for internships is on a letter grade, i.e., not pass/fail, basis); the faculty member who is supervising the experience has the discretion as to whether to roster it as a co-op or internship. Students in the Business Scholars Co-op Program must take it pass/fail. Prerequisite(s): 2.5 minimum GPA (higher for students in the Business Scholars Co-op Program) and completion of BUS 205 and preferably an upper-level major course

BSA 360 Part-Time Internship in Business Systems and Analytics
Part-time, generally non-paid employment in a company or organizational setting to provide on-the-job training. Involves appropriate job-related learning assignments under faculty supervision. The position must be approved by the Department. Consult the Associate Director for Experiential Education in Career Services before registering or for further information. An internship counts as an elective and not as a course in the major. Grading for internships is on a letter grade, i.e., not pass/fail, basis. The number 360 is used if taken in junior year and 460 if taken in senior year. Prerequisite(s): 2.5 minimum GPA and completion of BUS 205 and preferably an upper-level major course, or permission of the Assistant Dean

BSA 365 Full-Time Internship in Business Systems and Analytics
Full-time paid employment in a company or organizational setting to provide on-the-job training. Involves appropriate job-related learning assignments under faculty supervision.The position must be approved by the Department. Consult the Associate Director for Experiential Education in Career Services before registering or for further information. An internship counts as a free elective and not as a course in the major. Grading for internships is on a letter grade, i.e., not pass/fail, basis (grading for co-ops is on a pass/fail basis); the faculty member who is supervising the experience has the discretion as to whether to roster it as a co-op or internship. The number 365 is used if taken in junior year and 465 if taken in senior year. Prerequisite(s): 2.5 minimum GPA and completion of BUS 205 and preferably an upper-level major course

BSA 371 Special Topics
This course is designed to address contemporary issues and interests in Business Systems and Analytics. Such topics as as Process Analytics and Optimization, Network Analysis: Web Analytics/Social Network Analysis, and Business Forecasting will be offered in various semesters. Prerequisite: varies with topics.

BSA 375 Project Management
This course introduces students to the knowledge and skills required to effectively manage projects across a range of business and technical disciplines. It also provides an overview of the Project Management Institute's Guide to the Project Management Body of Knowledge. The course begins by describing the similarities and differences between project management and general management, as well as project management life cycles, phases, stakeholders, and process groups. Students become familiar with project management software and use this software as they complete assignments and a course project. The course reviews the core project management knowledge areas, including integration, scope, time, cost, quality, human resources, communications, risk, and procurement. Students work in teams that apply key skills and knowledge areas presented in the course. Prerequisite: sophomore standing.

BSA 385 Business Intelligence and Knowledge Management
This course is about the manager's responsibilities for decision making in the Information Age using Decision Support Systems (DSS) and Expert Systems (ES). DSS topics include: Data Management, Modeling and Model Management, User Interface, Executive and Organizational Systems, Group Decision Support Systems (GDSS), and DSS Building Process and Tools, including Spreadsheets, Natural Language Programming, and Influence Diagramming. ES topics include: Applied Artificial Intelligence, Knowledge Acquisition and Validation, Knowledge Representation, Inferencing, and ES Building Process and Tools. Students are required to apply DSS and ES software packages in a hands-on environment. Prerequisite(s): BUS 205 or equivalent

BSA 400 Business Applications Programming
This course explores a problem solving methodology that employs computer programming and scripting. Emphasis is placed on identifying the capabilities and limitations of statistical computing languages for big data. Students will learn skills and techniques to solve big data problems through a series of steps that involve identification of problems, design of the solution logic, formal representation of program specifications, and implementation of it using selected high level languages such as R, Python, and Hadoop. This is a hands-on course. Students will design and develop several computer programs throughout the term. Prerequisite(s): BUS 205 or equivalent

BSA 405 Emerging Trends in Business Systems and Analytics
This course is designed to introduce students to one of several areas of multi-disciplinary emerging trends in Business Systems and Analytics. Students will learn the fundamental principles and concepts of a specific topic, its applicable technology, the design and implementation of the systems that support the area of study, and methods for measuring efficacy. Evolving technologies will be addressed as appropriate, and their relevance to business pursuits will be discussed and analyzed. Lectures and case studies will be used to give the student a solid understanding of the topic. A group project to develop and present an area initiative/concept will be the capstone of this course. This course is offered under different titles and can be repeated for additional credit when taken as a different topic. Prerequisite(s): Varies by topic Data Visualization: One of the skills that characterize great business data analysts is the ability to communicate practical implications of quantitative analyses to any kind of audience member. In this course, students will learn how to visualize data, tell a story, and explore data by reviewing the core principles of data visualizing and dashboarding. The course aims to focus on effective and high impact visualizations of common data analyses to help them convey conclusions directly and clearly. Students will be able to get practiced in designing and persuasively presenting business "data stories" that use these visualizations, helping stakeholders make decisions and take action based on their business data capitalizing on design principles.

BSA 410 Systems Analysis and Database Design
Complex business systems and organizations are examined, with the goal of discovering their structure and information flow. Tools such as the Entity-Relationship Diagram, Data Structure Diagram, Data Flow Diagram, Data Dictionary, and Process Specifications are used to develop Systems Specifications. The blueprint developed during the systems analysis phase will be used to design and develop efficient and effective databse applications. To demonstrate acquired skills, students design and develop a relational database application with a database management system and write SQL statements to extract information. Prerequisite(s): BUS 205 or equivalent

BSA 420 Data Warehousing and Data Mining in Business
This course introduces data warehousing and data mining concepts. Topics include data warehousing and mediation techniques aimed at integrating distributed, heterogeneous data sources; data mining techniques such as rule-based learning, decision trees, association rule mining, and statistical analysis for discovery of patterns in the integrated data; and evaluation and interpretation of the mined patterns using visualization techniques. Prerequisite(s): Senior standing and BSA 302 (BSA 302 could be taken concurrently)

BSA 450 Cooperative Education (Senior Standing)
This is a full-time, paid, four-to-eight month assignment in a cooperating firm. Involves job-related learning under faculty supervision. The position must be approved by the Business Systems and Analytics Department. For registration information, students in the Business Scholars Co-op Program should consult with the Director of the program, and students who are not in the Business Scholars Co-op Program should consult with the Associate Director for Experiential Education in Career Services. A co-op counts as a free elective and not as a course in the major. Grading for co-ops is on a pass/fail basis (grading for internships is on a letter grade, i.e., not pass/fail, basis); the faculty member who is supervising the experience has the discretion as to whether to roster it as a co-op or internship. Students in the Business Scholars Co-op Program must take it pass/fail. Prerequisite(s): 2.5 minimum GPA (higher for students in the Business Scholars Co-op Program) and completion of BUS 205 and preferably an upper-level major course

BSA 460 Part-Time Internship in Business Systems and Analytics
Part-time, generally non-paid employment in a company or organizational setting to provide on-the-job training. Involves appropriate job-related learning assignments under faculty supervision. The position must be approved by the Department. Consult the Associate Director for Experiential Education in Career Services before registering or for further information. An internship counts as an elective and not as a course in the major. Grading for internships is on a letter grade, i.e., not pass/fail, basis. The number 360 is used if taken in junior year and 460 if taken in senior year. Prerequisite(s): 2.5 minimum GPA and completion of BUS 205 and preferably an upper-level major course, or permission of the Assistant Dean

BSA 480 Business Systems and Analytics Capstone
This integrative capstone course is designed to examine the effects of technology and its rapidly changing nature on the corporate environment. Students will learn how to think strategically about business systems and analytics within the context of a functioning organization. Classroom lectures and discussions are supplemented by multi-disciplinary real-life projects to design innovative information systems and analytics solutions. This course serves as the culminating experience in the Business Systems and Analytics program. Prerequisite(s): Senior standing and BSA 302 and 420 and 410 (BSA 410 could be taken concurrently)