

# BUSINESS ANALYTICS (BALT)

**BALT 5101 Analytical Tools for Management Decisions.** The goal for this course is to prepare students to be more effective users of quantitative information, as well as to avoid the many potential pitfalls from the misuse of statistical methods. The emphasis is on understanding what a previously obtained data set implies and, if appropriate, to develop meaningful forecasts with a reasonable sense of confidence. Specific topics include data analysis and statistical description, sampling and statistical inference, time series and regression analysis. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall, Spring, and Summer Terms)  
MESA (Typically Offered: Fall, Spring, and Summer Terms)

**BALT 5201 Programming for Analytics.** The goal for this course is to introduce students, without prior programming experience, to essential programming concepts and techniques needed for analytics. The goal is to equip students with the necessary programming skills to be successful in other courses in the business analytics program. Examples are drawn from the problems often encountered in data analysis. Programming languages may include SAS, R, and Python. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 5251 Programming for Information Systems.** Through the study of this course, students can understand the basic principles, new technologies and development trends of computer, master the use of common operating systems and application software skills, improve the application of network, multimedia and other technologies, understand the basic knowledge of information security and program design, and cultivate innovative consciousness and ability through practice. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 5351 Computer Organization and Architecture.** This course takes digital circuit and logic design (basic part), computer composition (main part), computer architecture (advanced part) as the main line, focusing on the complete composition of computer systems and feasible ways to improve performance. Through the study of this course, students can systematically understand the basic principles of computer composition and internal operating mechanism, master the basic concepts and basic working principles of computer systems, and understand the hardware structure, interaction and function of each main component. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 5451 Business Data Analysis.** The purpose of this course is to have students master the basic concepts, related technologies of Business Data Analysis and its application status, application prospects and research directions in different data processing, and different rules extraction. After studying this course, students should understand and explain the following: 1) Data retrieval and preprocessing for business decision-making; 2) Understand data analysis and mining methods including Association Rules Mining, Classification and Prediction, and Cluster Analysis; and 3) Use popular data mining software to implement data analysis tasks. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6102 Business Analytics I: Predictive Analytics.** Business analytics refers to the skills, technologies, applications and practices for continuous iterative exploration and investigation of past business performance to gain insight and drive business planning. Business analytics focuses on developing new insights and understanding of business performance based on data and statistical methods. It makes extensive use of data, statistical and quantitative analysis, explanatory and predictive modeling and fact-based management to drive decision making. Analytics may be used as input for human decisions or may drive fully automated decisions. Deliverables may include article reviews, case analyses, software-based exercises, projects, and presentations. Cross-listed as MSBA 6659. Prerequisite: BALT 5101. 3 semester credit hour/s.

**BALT 6103 Business Analytics II: Prescriptive Analytics.** This course introduces the topics of optimization techniques for management decisions. Optimization is the process of discovering the best business solution from many feasible solutions using mathematical and statistical methods. The increasing complexity of today's business decision-making has resulted in the development of many optimization techniques. These techniques have provided a wealth of solutions to facilitate business planning and execution. Optimization combines data transformation, mathematical model building, and optimization software with analytical tools to present the recommended solutions to planners and decision makers. Deliverables may include article reviews, case analyses, software-based exercises, projects, and presentations. Cross-listed as MSBA 6641. Prerequisite: BALT 6102. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6201 Databases and Data Warehousing.** Databases and Data Warehousing. Database technology has evolved from simply being a better way to organize and access data to being an information systems keystone, required to effectively support the enterprise. This course introduces database technology, emphasizing effective database design. This course also introduces data warehousing, which combines data from varied sources into one comprehensive and easily manipulated database. The goal is to analyze trends over time, thereby contributing to business forecasting, strategic planning and making smarter decisions faster. Deliverables may include article reviews, case analyses, software-based exercises, projects, and presentations. Cross-listed as MSBA 6687. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6251 Big Data Management and Applications.** The era of big data has been fully opened, and understanding the concept of big data and having big data thinking are the new requirements for talents in the new era. The course includes overview of big data, big data and cloud computing, Internet of Things and artificial intelligence, big data technology, big data application, big data security, big data thinking, big data ethics, data sharing, data opening, big data trading, and big data governance. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6261 Information Systems Security.** Database technology has evolved from simply being a better way to "organize and read data" to becoming the core technology of information systems management. Through this course, students should be able to understand and explain 1) the process required to effectively design a database, 2) how to design and implement a database program system by using relevant data management products (ACCESS, ORACLE, DB2, etc.), and 3) the basic structure of relevant data models and SQL language; 4) the composition, roles, and functions of the database environment, and the importance of data security, integrity, and recovery. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6301 Machine Learning.** This course introduces the topics of data mining and business intelligence. Data mining is the process of discovering new patterns from large data sets involving methods at the intersection of artificial intelligence, machine learning, statistics and database systems. The overall goal of the data mining process is to extract knowledge from a data set in a human-understandable structure. Business Intelligence systems combine data gathering, and data storage with analytical tools to present complex corporate and competitive information to planners and decision makers. The objective is to improve the timeliness and quality of the input to the decision process. Deliverables may include article reviews, case analyses, software-based exercises, projects, and presentations. This course introduces the topics of data mining and business intelligence. Data mining is the process of discovering new patterns from large data sets involving methods at the intersection of artificial intelligence, machine learning, statistics and database systems. The overall goal of the data mining process is to extract knowledge from a data set in a human-understandable structure. Business Intelligence systems combine data gathering, and data storage with analytical tools to present complex corporate and competitive information to planners and decision makers. The objective is to improve the timeliness and quality of the input to the decision process. Deliverables may include article reviews, case analyses, software-based exercises, projects, and presentations. Cross-listed as MSBA 6663. Prerequisite: MNGT 6701. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6401 Analytics for Big Data.** This course introduces the concept of big data, that is, data sets so large that traditional relational database management systems, statistics, and visualization tools are insufficient. Organizations today are inundated with data, gathered from both inside and outside the organization. Analytics for data-at-rest and data-in-motion will be explored. The problem of solving problems which involve complex and structured data will be explored using the Hadoop platform. Deliverables may include article reviews, case analyses, software-based exercises, projects, and presentations. Cross-listed as MSBA 6686. Prerequisite: BALT 6201. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6501 Data Visualization.** This course introduces data visualization, that is, communicating information clearly and effectively through graphical means. Visualization tools go beyond the typical tables, histograms, pie charts and bar graphs by displaying data in more sophisticated ways such as dials and gauges, geographic maps, time-series charts, tree maps, heat maps and detailed bar, pie and fever charts. The goal is to expose patterns that might not have been noticed otherwise. Visualized data is often displayed in business Intelligence dashboards which provide users with high-level views of corporate information and key performance indicators. Deliverables may include article reviews, case analyses, software-based exercises, projects, and presentations. Cross-listed as MSBA 6685. Prerequisite: BALT 6201. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6651 Information Systems Security.** This course aims at the basic principles and technologies of network information security, security threats, and preventive measures existing in modern information systems, security architecture and models, basic cryptographic knowledge and application, basic identity authentication technology, network firewall technology, virus and hacker attack defense technology, general system security enhancement technology, the security protection technology of E-mail and Web systems, as well as new technologies and trends in information security. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6701 Business Intelligence.** This course explores how data and information systems can be utilized to drive effective operations, improved decision-making and create strategic advantages in organizations. Students will review the information lifecycle components of data collection, analysis, and interpretation as well as the development of measurement systems that align with strategic goals. It includes an introduction to common analysis techniques as well as technology tools that can be utilized for both analysis and presentation. Focus will be placed on collecting and transforming quality data in order to draw appropriate conclusions. Cross-listed as MIS 6677. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6751 Internet Technology and Applications.** The objective of this course is to lay a foundation for students to use the Internet in their future study and work. Through the study of this course, students will understand the main content, system composition and characteristics of Internet technology, master the characteristics and application fields of network transmission media, understand the characteristics and engineering application conditions of TCP/IP protocol, and master the basic grammar rules of HTML language. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6801 Business Analytics Capstone.** This course requires students to use and integrate the disciplines and techniques learned in business analytics program coursework to address a real-world problem, strategy formulation and implementation concepts are discussed using cases and readings. Deliverables may include article reviews, case analyses, software-based exercises, a course-length project, and presentations. This course should be taken within two courses of completion or with permission of the program director. Cross-listed as MSBA 6689. 3 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6851 Strategic Information Technology Management.** This course requires students to use all disciplines and techniques learned. Strategy formulation and implementation concepts focusing on information technology are discussed using cases and readings. This course should be taken within two courses of completion or with permission of the program director. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6901 Independent Study in Business Analytics.** This course allows an opportunity for a student to concentrate on a specific topic related to an existing course or to explore a timely topic not covered in an existing course. A proposal is required, outlining the nature of the problem and scope of the investigation. A research paper or project is required, as appropriate to the problem under investigation. Cross-listed as MSBA 6600. Department Consent Required. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 3. Department Consent Required.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6902 Internship in Business Analytics.** An internship offers practical work experience within which the student has the opportunity to apply and test theoretical learning while developing executive skills. The internship experience may be an apprenticeship in which a less experienced student learns about the organization, the business unit, and a variety of analytics projects in which the supervisor is involved, or a project in which the student has major responsibility for a specific assignment and exposure to other areas of responsibility or interest. The Business Analytics internship may be repeated in different settings. Cross-listed as MSBA 6691. Department Consent Required. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 3. Department Consent Required.

**Campus:** LISLE (Typically Offered: Annually)

**BALT 6903 Special Topics in Business Analytics.** Timely business analytics topics are presented in the form of 1, 2, or 3-semester credit hour courses. Keeping pace with advances in analytics requires constant learning. These courses provide an opportunity to examine and assess issues in analytics. There are no designated pre-requisites, but graduate students are encouraged to have completed at least 12 semester credit hours. Topics are announced in advance. Cross-listed as MSBA 6691. Department Consent Required. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 3. Department Consent Required.

**Campus:** LISLE (Typically Offered: Annually)