MASTER OF SCIENCE (M.S.) IN BUSINESS ANALYTICS

College: Daniel L. Goodwin College of Business
Department: Business
Student Type: Graduate Semester
Degree: Master of Science (M.S.)
Campus: Lisle Campus

Overview

The Master of Science Program in Business Analytics (M.S. in Business Analytics) at Benedictine University leverages our decades-long expertise in preparing professionals for rapid advances in technology, intense global competition, and more complex business environments.

Our curriculum covers the major areas of business analytics: databases and data warehouses, descriptive analytics, predictive analytics, prescriptive analytics, as well as organizational considerations.

Specifically, our business analytics program focuses on the skills, technologies, applications, and practices for iterative exploration and investigation of past business performance to gain insight and drive business planning. It makes extensive use of data, statistical and quantitative analysis, explanatory and predictive modeling, and fact-based management to drive decision-making. Data-driven companies treat their data as a corporate asset and leverage it for competitive advantage.

Examples of business analytics uses include:

- Exploring data to find new patterns and relationships
- Explaining why a certain result occurred
- Simulating business decisions to facilitate business planning and execution
- Forecasting future results

The graduate program in business analytics is appropriate for students in functional business units as well as information technology because it leverages information technology and business thinking to turn data into actionable intelligence. The program is designed for students who have an interest in quantitative methods, exploring and uncovering relationships through data analysis, using data to solve business problems, and who want to enter or advance in a career in business analytics.

Our program's commitment to individual development is the basis for the professional achievements of its graduates. This approach gives students a unique opportunity to interact with graduate students in all our graduate business and management programs. The exposure to other students with different talents, experiences, and job responsibilities is a key element in each student's development of business analytics skills.

The educational approach of the program emphasizes practical application of technical tools and management theories to a variety of hypothetical and real-life data problems. Students gain an appreciation for the complexity of challenges associated with business analytics through group interaction, comprehensive projects, case analysis, research, and active participation in the sharing of individual experiences. This variety of teaching methods prepares students to be leaders in the 21st century.

Our graduate business analytics program is a STEM-designated program, with CIP code 52.1399 Management Science and Quantitative Methods, Other.

The program's classes are ideal for those who seek flexibility in their course schedules and plan to register as either a full- or part-time student. Courses are taught in eight-week terms and are held one evening per week (Monday through Thursday), two weekends (Friday evening, all day Saturday and Sunday), or on several Saturdays. Some courses are also available online. Please consult MyBenU (https://mybenu.ben.edu/) for exact times and locations.

Learning Goals for the M.S. in Business Analytics Program

Students will be expected to:

- Demonstrate leadership and ethical decision-making in situations that may be structured, unstructured, and/or ambiguous.
- Demonstrate quantitative and qualitative skills in analyzing business problems.
- Integrate information technologies with data science methods to extract value from data.
- Communicate results of analysis in written, oral, and visual ways to a variety of audiences: technical and non-technical.

4+1 M.S. in Business Analytics Program

Well-qualified Benedictine University students who complete a B.B.A. or B.S. degree may be eligible to complete the master's degree in Business Analytics in approximately one additional year of full-time graduate study. Students in other majors are encouraged to discuss curricular options with the program director. The full-time 4+1 Program is developed specifically for recent college graduates. Admission to the program is not automatic and an application must be completed during the student's senior year of undergraduate coursework.

Student Type: Graduate Quarter
Campus: Lisle Campus

Students may not enter the M.S. in Business Analytics program on quarters after the Spring 2021 term. Where possible, existing quarter M.S. in Business Analytics students were converted to semester M.S. in Business Analytics students as of Summer 2021.

Existing students should refer to original catalog of entry for appropriate academic requirements. College of Business academic advisors can clarify appropriate quarter to semester course requirements. Quarter credits convert at a 3 quarter credits to 2 semester credits ratio. Required courses and earned credits will be applied at the 3:2 ratio. Partial credits are not rounded up.

Admission Requirements
Requirements

Application for graduate admission

- $40 non-refundable application fee
- Official transcripts from all universities/colleges attended. Official electronic transcripts can be emailed to e-transcripts@ben.edu
- Official copy of GRE or GMAT test scores or completed test waiver form

- Two letters of reference from individuals familiar with the applicant's professional or academic work, excluding family or personal friends
- A one- to two-page essay addressing educational and career goals
- Current résumé listing chronological work history
- Personal interview may be required prior to an admission decision
- Students who have completed any foreign postsecondary education (college, university, etc.) are required to submit an official credit evaluation. Students may request a report from any of the following evaluation companies, or any credential evaluation service that is a member of the National Association of Credential Evaluation Services (https://www.naces.org/) (NACES): Educational Credential Evaluators (https://www.ece.org/) (EP), Educational Perspectives (https://www.edperspective.org/)(EP) or Slate Education Foundation (https://slate.org.in/) (SEF). In addition, SEF will assist with credential authentication and degree equivalency using appropriate resources of World Education Service (https://www.wes.org/) (WES) for admission into Benedictine University's graduate programs by computing calculations such as GPA conversions and credit hours. Students completing the SEF evaluation seeking course waivers must supply Benedictine with the appropriate course syllabi. Transcript evaluations shall be performed by trained foreign credential evaluators at SEF. Students must request a course-by-course evaluation including a U.S equivalent cumulative GPA. Official reports are mailed or electronically sent directly to Benedictine Admissions (admissions@ben.edu) from a NACES member organization. Please contact the Enrollment Center (enrollmentprocessing@ben.edu) for more information.

Degree Requirements
Semester Curriculum

The M.S. in Business Analytics program requires 33 semester credit hours of Core coursework as well as nine semester credit hours of Foundation coursework.

Our courses are scheduled so that a student may complete the program in approximately two years by taking two courses per semester.

Code	Title	Hours
Business Analytics Foundations [1]		
BALT 5101	Analytical Tools for Management Decisions	3
MNGT 5101	Organizational Behavior	3
ACCT 5100	Accounting for Non-Financial Managers	3
Business Analytics Core		
BALT 5201	Programming for Analytics	3
BALT 6102	Business Analytics I: Predictive Analytics	3
BALT 6103	Business Analytics II: Prescriptive Analytics	3
BALT 6201	Databases and Data Warehousing	3
BALT 6301	Machine Learning	3
BALT 6401	Analytics for Big Data	3
BALT 6501	Data Visualization	3
BALT 6801	Business Analytics Capstone	3
MNGT 6401	Leadership and Ethics in a Global Environment	3
MNGT 6601	Project Management	3
MNGT 6701	Business Intelligence	3
Business Analytics Electives [2]		
BALT 6901	Independent Study in Business Analytics	1-3
BALT 6902	Internship in Business Analytics	1-3
BALT 6903	Special Topics in Business Analytics	1-3

[1] May be waived.
[2] Offered as needed and by permission of the department chair/program.

Optional Concentrations
Project Management
Project management is an in-demand skill set, spanning all industries and sectors of business. Project management leadership is a highly sought-after skill as intense global competition demands that new projects and business development be completed on time and within budget. Courses offer the student an understanding of organizational behavior as it relates to the individual, effective team-building skills, conflict management and resolution, as well as skills to effectively manage the financial side of projects.

Code	Title	Hours
Required Courses		
MNGT 6101	Organizational Behavior: Theory and Contemporary Practice	3
or MNGT 5101	Organizational Behavior	
MNGT 6601	Project Management	3
MNGT 6602	Project Cost and Scheduling	3
Optional Course		
MNGT 6603	PMP Preparation	
Total Hours		**9**

DIGITAL MARKETING
Digital marketing uses social media platforms to engage your audience—customers, clients, stakeholders—to build your brand. Increased web traffic leads to increased sales. Advertising on various social media platforms is analyzed. Publishing content on social media platforms is considered. Listening to your audience is also examined.

Code	Title	Hours
Required Courses		
MKTG 6101	Brand and Marketing Management	3
MKTG 6102	Advanced Search and Social Media Marketing	3
MKTG 6103	Advanced Content Marketing, Automation, and Google Analytics	3
Total Hours		**9**

Change Management
A recent Future of Jobs Report projected that jobs leveraging "human" skills such as training and development, and Organization Development specialists to increase. Change Management will provide knowledge to prepare adults for the world of change. Exposure to the role of consulting, the ability to work and improve teams, and understanding the role of the organization development practitioner will be explored.

Code	Title	Hours
MNGT 6201	Organizational Development	3
MNGT 6202	Groups and Team Building	3
MNGT 6203	Organizational Development - Consulting Skills	3
Total Hours		**9**

TALENT MANAGEMENT

Provides students with knowledge and skills in human resource functions, exploring cutting-edge concepts in talent management, business intelligence and ethics. Appropriate for students or working professional in the Human Resources and Talent Management arena.

Code	Title	Hours
MNGT 6301	Human Resources and Talent Management	3
MNGT 6401	Leadership and Ethics in a Global Environment	3
MNGT 6701	Business Intelligence	3
Total Hours		**9**

Course Substitutions and Waivers

Course substitutions and waivers for 5000-level courses may be determined by the M.S. in Business Analytics program director on a case-by-case basis. Students with a relevant graduate degree or a professional or industry certificate/licensure (e.g. Certified Public Accountant, Project Management Professional, etc.) may be eligible for a course substitution/waiver. Students with extensive undergraduate equivalent coursework completed at a 3.000/4.000 or higher GPA taken within five years from the date of application to the M.S. in Business Analytics program may be eligible for a course substitution/waiver. Course substitutions/waivers cannot be awarded for professional work/life experience.

Courses

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.
Campus: LISLE (Typically Offered: Annually)

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)

Objectives
Students in the Master of Science in Business Analytics program will achieve the following student learning outcomes (SLO):

Student Learning Outcome 1: Demonstrate leadership and ethical decision-making in situations that may be structured, unstructured, and/or ambiguous.

• University SLO: 7. Civic Engagement and Social Responsibility; 9. Personal Development

Student Learning Outcome 2: Demonstrate quantitative and qualitative skills in analyzing business problems.
• University SLO: 1. Disciplinary Competence and Skills; 5. Analytical Skills

Student Learning Outcome 3: Integrate information technologies with data science methods to extract value from data
• University SLO: 1. disciplinary competence and skills; 2. Critical and Creative Thinking Skills

Student Learning Outcome 4: Communicate results of analysis in written, oral, and visual ways to a variety of audiences: technical and non-technical.
• University SLO: 2. Critical and Creative Thinking Skills; 3. Communication Skills; 4. Information Fluency