

# BUSINESS SYSTEMS AND ANALYTICS, M.S.

## Program Description

Business Systems & Analytics (BSA) is the process of transforming data into insights for informed business decision making. Data management, data visualization, predictive modeling, data mining, forecasting, business application programming and modeling, simulation, and optimization are some of the methodologies used in business analytics to create insights from data. The MS program in BSA is designed to reflect an interdisciplinary play between the business analytics fields of Statistics, Operations Research, and Information Systems; and the functional business fields of Accounting, Finance, and Marketing. The program provides students with a practical and theoretical understanding of the latest business analytics tools and technologies for effective and informed problem-solving and decision-making. The emphasis across required MS courses in BSA is on problem formulation, modeling, solution, visualization, and interpretation, and communication of analytical results, as well as the sound application of analytic frameworks and technologies.

The M.S. program is structured in a Hybrid and Online format which allows working professionals greater flexibility and convenience as they move through the program. Courses are delivered in mix of hybrid and fully online courses.

- The hybrid courses are 50% online and 50% in the classroom. By leveraging the latest teaching and learning technologies, the educational experience reflects the ways in which companies operate today. This new approach creates an effective educational experience for working professionals attending as part time students.
- The fully online courses provide working professionals with greater flexibility and convenience as they move through the program. We have developed a learning experience that leverages the latest teaching and learning technologies to deliver an environment to deepen our students' understanding of business and markets, and improve their decision making skills. With the Lasallian emphasis on the value and impact of personalized interactions among professors and classmates, our students are fully engaged in their education.

## School of Business' Mission

The School of Business (LSB) is committed to La Salle University's principle that all knowledge is practical and empowering, filled with the ability to transform lives. By integrating liberal arts with professional studies, we strive to mold our students into future, results-driven business leaders. Our curriculum and faculty scholarship are predicated upon experiential and engaged learning with an emphasis on fostering curiosity, critical thinking, innovation, and social responsibility. LSB graduates will promote effective, accountable, and inclusive organizations that honor just and equitable practices with a global perspective.

## Master of Science in Business Systems and Analytics' Program Mission

The mission of the BSA program is to advance knowledge and promote the use of business analytics and data science for informed and effective problem-solving and decision-making. Through its faculty, curriculum, students, department-sponsored activities, and partnerships with the alumni and business community, the BSA major seeks to provide a value-

added experience for students by communicating and demonstrating the importance of and the need for information business analytics and data science knowledge and skills in the workplace.

## Program Specific Information

Business education has been part of the La Salle curriculum since its founding in 1863. The School of Business, one of three schools in the University, was established in 1955, and its MBA program began in 1976. As a business school in a Catholic, Lasallian University, students are taught fundamental business knowledge and skills within an ethical framework which emphasizes the primacy and value of human dignity.

## STEM Designation

The MS program in BSA meets the requirements of what the Department of Homeland Security considers to be a science, technology, engineering, or mathematics (STEM) field of study. International students who graduate from these programs may be eligible to apply for a 24-month OPT extension.

## Admission Deadlines

There are no set deadlines. However, we recommend that all application documents be received by August 15, December 15, and April 15 for the fall, spring, and summer terms, respectively. Under special circumstances, students may be admitted until the first day of the semester. International student applications should be completed at least two months prior to the start of the term.

Contact the MS BSA office if you have any questions at [gradbusiness@lasalle.edu](mailto:gradbusiness@lasalle.edu).

## Admission Requirements

The Admission Committee evaluates each applicant's interest, aptitude, professional experience and prior academic success to assess his/her potential for achievement in graduate business studies. The structure of the La Salle MS in Business Analytics program lends itself to those students with or without an undergraduate degree in business.

Before an applicant will be evaluated, he/she must submit the following information:

- Application (Online)
- Transcript Evaluation (International Students only) - see more information below
- English Language Proficiency Exam (International Students only) - see more information below
- Official transcripts from the college/university from which a bachelor's degree was earned, and, if applicable, Master's degree. Applicants will be notified additional transcripts must be submitted for advising purposes.
- Test scores from the Graduate Management Admission Test (GMAT), or, with permission of the Director, the Graduate Record Examination (GRE). ***Based on prior academic and/or professional success, the admission requirement to take the GMAT/GRE may be waived or deferred. Please see the section below "Waiver of GMAT or GRE".***
- Professional resume

## English Language Proficiency Exam

International graduate students must submit one of the following English-language proficiency exams:

- TOEFL score of 88 or greater
- IELTS score of 6.5 or greater
- Duolingo score of 105 or greater

Students may be waived from submitting proof of English-language proficiency if they meet one of the following exemptions:

- You have studied in an English-based curriculum for three or more years.
- You are from a territorial entity where English is an official language.

## Transcript Evaluation

We require a course-by-course evaluation completed for any international college courses taken. An evaluation is also needed for any transcripts not provided in English.

We accept evaluations from any member of the National Association of Credential Evaluation Services organization. You can find a list of NACES members here (<https://www.naces.org/members/>).

## Waiver of GMAT or GRE Requirement

Applicants that have earned a master's degree or higher from a program accredited in its discipline will be waived from the GMAT or GRE exam requirement. Additionally, applicants with an undergraduate business degree from an AACSB-accredited program who have a minimum overall grade point average of 3.2 or above are not required to complete the GMAT or GRE exam for admission into the program.

The GMAT (or GRE) may be waived for additional applicants at the discretion of the Admission Committee upon reviewing an applicant's overall profile.

The GMAT/GRE may be deferred and eventually waived if an applicant has graduated with a 3.0 GPA in any undergraduate discipline and has at least 2 years of business experience. These students are eligible to take up to 12 credits in the program. If the student achieves a B- or better in each course and an overall GPA of 3.3, the GMAT/GRE will be waived. Students that qualify for a GMAT deferral may not be eligible for financial aid loans until they are fully (regularly) accepted to the program.

## Admission Process

Students can begin the admissions process by completing an application on our website here (<https://www.lasalle.edu/apply-to-la-salle/>).

All documents should be sent to the following:

Office of Graduate Enrollment  
La Salle University- Box 826  
1900 W. Olney Avenue  
Philadelphia, PA 19141  
215.951.1100/ Fax 215.951.1462  
[grad@lasalle.edu](mailto:grad@lasalle.edu)

Because each applicant's background and profile is unique, the Admission Committee does not establish specific quantitative minimum requirements for admission; the admission committee's decisions are based on evaluating many factors to determine a student's potential for success in the MS program.

Please refer to the University's Nondiscrimination Policy in the General Reference section of this catalog. Admission is based solely upon an applicant's qualifications.

## Conditional Admission

Students that are currently enrolled in their final semester will be considered for a conditional admission until their degree is conferred. Conditionally accepted students are required to successfully complete their degree and submit an updated transcript illustrating their degree conferral prior to the start of the MS program. Conditionally accepted students are not eligible for financial aid loans until they are fully (regularly) accepted to the program. International students may be admitted under conditional admission; however, all their conditions must be met before an I-20 can be issued.

## Transfer of Credit

Course transfers can only be granted prior to being admitted to the La Salle MBA program. For more information, please view the full transfer of credit policy under the policy tab.

## Degree or Certificate Earned

M.S.

## Required for Program Completion

- Courses
  - Between 10 and 12 courses
- Credits
  - Between 30 and 34 Credit Hours
- GPA
  - 3.0

## Program Goals

The goal of the BSA program is to advance student knowledge, skills, and competency in developing business analytics and data science solutions that can improve productivity and business performance. In today's information age, professionals entering the marketplace require specialized training and education in problem-solving, creative thinking, analytical skills, organizational skills, technology skills, and communication skills. The BSA program and faculty are committed to developing these competencies through educational and extra-curricular activities.

## Student Learning Outcomes

**Learning Goal 1: To use analytic methods and information systems tools and technologies to drive effective and data-driven solutions to business problems and decisions.**

- Learning Outcome 1.1: Students should be able to perform data analysis using various analytical techniques, interpret results to solve business problems and make informed business decisions.
- Learning Outcome 1.2: Students should be able to use data management tools and technologies to improve organizational support of data-driven solutions to business problems and decisions.
- Learning Outcome 1.3: Students should be able to formulate problems and develop data-driven solutions to business problems and decisions using information systems and analytics tools and technologies.
- Learning Outcome 1.4: Students should be able to identify, formulate, and solve optimization problems, and perform sensitivity analysis and simulation to examine alternative scenarios.

**Learning Goal 2: To effectively communicate the results of analytic solutions to business problems and decisions.**

- Learning Outcome 2.1: Students should be able to effectively convey, through oral and written communication, the results of analytical solutions to business problems and decisions.
- Learning Outcome 2.2: Students should be able to perform exploratory analysis and design effective reports, visualizations, and dashboards.
- Learning Outcome 2.3: Students should be able to apply data visualization best practices.

**Learning Goal 3: To use analytics tools and technologies for effective functional business decision making.**

- Learning Outcome 3.1: Students should be able to utilize accounting analytics methods and technologies for financial and managerial accounting problem solving and decision making.
- Learning Outcome 3.2: Students should be able to use financial analytics tools and techniques in business decision making.
- Learning Outcome 3.3: Students should be able to apply marketing analytics tools and metrics to investigate the impact of marketing activities and strategies on business productivity.

## M.S. Academic Standing and Graduation Requirements

All students in La Salle University's M.S. programs are required to maintain a cumulative scholastic average of 3.0, which translates to an overall G.P.A. equivalent to a B (a B- average is not sufficient). Students whose academic performance falls below this standard are subject to academic review by the Graduate Program Director, and may be required to withdraw from the program, revise their course of study or repeat specific classes.

Students with a cumulative grade point average below 3.0 are automatically in academic jeopardy whether or not they receive written notification of this status, and regardless of the number of credits earned. Students with a G.P.A. below 3.0 should consult with the Graduate Program Director to ascertain any potential actions to improve academic success within the program.

To graduate from the M.S. Program at La Salle, students must:

- Have a minimum of a 3.0 G.P.A. overall within the M.S. program,
- Maintain a "C" or better in all the required courses, and
- Receive no more than two grades of "below" a B- in the M.S. program.

Should students:

- Fail a course; they may retake the course by paying the current pertinent tuition. No more than two course retakes are allowed in the M.S. program.
- Complete all required courses, but fall below a 3.0 cumulative G.P.A. requirement, they will not be eligible to graduate. In this case, the students may retake up to two courses to improve their G.P.A. to a 3.0 or higher, as long as the total number of course retakes in the program does not exceed two courses.

In extraordinary circumstances, a student may be permitted to earn one additional "C" or retake one additional course at the Graduate Program

Director's discretion, as long as all other graduation requirements are met.

## Transfer of Credit

Students can transfer up to six credit hours of graduate level work into the Master of Science in Business Systems and Analytics Program.

To be eligible for transfer credits, the following criteria must be met.

- Courses must be applicable to the program curriculum to be eligible for transfer.
- Course credit may be transferred only from graduate programs at accredited institutions.
- Courses must have been completed with a grade of B or better to be transferred.

Course transfers can only be granted prior to being admitted to the La Salle MBA program.

Course credit may not be transferred into graduate certificate programs.

## Scholarships

Full-Time students may receive partial scholarships awarded on merit. Students will be notified at the time of admission if awarded a merit-based scholarship.

## Tuition and Fees

Students may find the tuition and fee schedule on the Financial Aid website (<http://www.lasalle.edu/financialaid/undergraduate-tuition-and-fees/>).

## Tuition Assistance

There are loan programs available for graduate students. Information about financial aid and the application forms may be obtained from Student Financial Services (<https://www.lasalle.edu/financialaid/>), La Salle University, Philadelphia, PA 19141 or by calling 215.951.1070.

## Academic Requirements

Students must complete between 30 and 34 credits to complete the M.S. degree at La Salle University.

## Pre-Program Courses

The **Pre-Program courses** are designed to provide students with a basic and functional knowledge of accounting and finance for managerial decision making and problem-solving. The two two-credit courses may be waived based on a student's academic and professional background.

## Business Perspective

The **Business Perspective** courses are designed around a set of core courses in business analytics, marketing, accounting, and finance, enabling students to develop a general understanding and acquire core competencies in business before taking more advanced and technical courses in business systems and analytics.

## Data Perspective

The **Data Perspective** courses are designed to teach students the role of data in business analytics by studying data warehousing, data mining, simulation, and optimization. The students also learn to communicate

the practical implications of quantitative analyses effectively through data visualizing and dashboarding.

Systems Perspective

The **Systems Perspective** courses are designed to teach students the 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 to solve big data problems by designing the solution logic and formal representation of program specifications using selected high-level languages. The students also learn about systems analysis and structured analysis, and design methodology for complex business systems.

Managerial Perspective

The **Managerial Perspective** course is designed to teach students about the manager’s responsibilities for problem-solving and decision making and those areas in which information technology can be used to gain the insight needed to support the selection of decision alternatives. Students learn about the role of data, information, and knowledge in managerial problem solving and decision making.

Code	Title	Credits
Pre-Program courses		
MBA 601	Financial Accounting	2
MBA 602	Financial Markets	2
Business Perspective		
MBA 693	Business Analytics for Informed and Effective Decision Making	3
MKT 730	Strategic Marketing Analytics	3
ACC 731	Accounting Analytics	3
FIN 732	Financial Analytics	3
Data Perspective		
BSA 720	Data Warehousing and Data Mining	3
BSA 730	Optimization and Simulation	3
BSA 740	Data Visualization	3
Systems Perspective		
BSA 700	Business Applications Programming	3
BSA 710	Systems Analysis and Database Design	3
Managerial Perspective		
MBA 820	Information Technology for Decision-Making	3
Total Credits		34

Course Sequence

One and Two Year Degree Completion Options

The program can be completed full-time in one year (3 semesters) or part-time in two years (6 semesters). Whether the program is completed in one or two years, a student may take courses on campus or fully online. *International students residing in the U.S. must take courses on campus in the full-time program over the course of one year.*

New students can enroll in the Fall, Spring or Summer terms.

The M.S. courses are offered in 8-week terms, five times per year. The terms begin in August, October, January, March, and May.

Full-Time MS BSA Program

Students can complete the program in a full-time capacity by taking two courses per 8-week term for one year. Students in the full-time program can take courses fully online or in a hybrid format. International students must be enrolled in the full-time program, completing courses on campus over the course of one year.

Course	Title	Credits
First Semester		
Term I (August - October)		
MBA 601	Financial Accounting	2
MBA 693	Business Analytics for Informed and Effective Decision Making	3
BSA 720	Data Warehousing and Data Mining	3
Term II (October - December)		
MBA 602	Financial Markets	2
MKT 730	Strategic Marketing Analytics	3
ACC 731	Accounting Analytics	3
Credits		16
Second Semester		
Term I (January - March)		
MBA 820	Information Technology for Decision-Making	3
BSA 740	Data Visualization	3
Term II (March - May)		
FIN 732	Financial Analytics	3
BSA 710	Systems Analysis and Database Design	3
Credits		12
Third Semester		
Term I (May - July)		
BSA 700	Business Applications Programming	3
BSA 730	Optimization and Simulation	3
Credits		6
Total Credits		34

Part-Time MS BSA Program

Students can complete the program in a part-time capacity by taking one course per 8-week term for two years. Students in the part-time program can take courses fully online or in a hybrid format.

Course	Title	Credits
First Year		
First Semester		
Term I (August - October)		
MBA 601	Financial Accounting	2
MBA 693	Business Analytics for Informed and Effective Decision Making	3
Term II (October-December)		
MBA 602	Financial Markets	2
ACC 731	Accounting Analytics	3
Credits		10
Second Semester		
Term I (January - March)		
BSA 740	Data Visualization	3
Term II (March - May)		
BSA 710	Systems Analysis and Database Design	3
Credits		6
Third Semester		
Term I (May - July)		
BSA 700	Business Applications Programming	3
Credits		3



**Second Year****First Semester****Term I (August - October)**

BSA 720	Data Warehousing and Data Mining	3
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**Term II (October-December)**

MKT 730	Strategic Marketing Analytics	3
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<b>Credits</b>	<b>6</b>
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**Second Semester****Term I (January - March)**

MBA 820	Information Technology for Decision-Making	3
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**Term II (March - May)**

FIN 732	Financial Analytics	3
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<b>Credits</b>	<b>6</b>
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**Third Semester****Term I (May - July)**

BSA 730	Optimization and Simulation	3
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<b>Credits</b>	<b>3</b>
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<b>Total Credits</b>	<b>34</b>
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## Course Descriptions

**MBA 601 Financial Accounting**

This course is an introductory study of financial accounting. It includes the study of basic accounting language and concepts, recording financial transactions, preparation and interpretation of financial statements, accounting methods, business decisions, inventory valuations, and methods of obtaining capital.

**MBA 602 Financial Markets**

This course serves as an introduction to the financial system and its relationship to the financing of domestic and international business activity. Financial market components and phenomena such as financial instruments, institutions, flow of funds, market efficiency, interest rate determination and term structure, exchange rates, and the balance of payments are analyzed. The governmental impact on financial markets, manifested through monetary and fiscal policy and regulation, is also covered. An introduction is given to the concept of financial asset valuation and the time value of money. The emphasis is on the significance of these elements for conducting the financial affairs of businesses.

**MBA 693 Business Analytics for Informed and Effective Decision Making**

This course introduces students to the growing field of business analytics. Business analytics is the use of data, information technology, statistical analysis, and quantitative methods and models to support effective organizational problem solving and informed decision making. The course includes methods, tools, and techniques for summarizing and visualizing historical data, which is relevant to descriptive analytics – the use of data to find out what has happened in the past or is currently happening; methods, tools, and techniques for extracting information from existing data in order to determine patterns, which is relevant to predictive analytics – the use of data to find out what will happen in the future; and methods, tools, and techniques for optimization, which is relevant to prescriptive analytics – the use of data to determine the best course of action in the future.

**MKT 730 Strategic Marketing Analytics**

Marketing analytics is an important component of managerial decision-making. A wide range of strategic and tactical decisions requires valid and reliable information if the firm's efforts are to be successful. The tools and techniques of marketing analytics allow managers to obtain valuable information about customers, competitors, and the market environment. It is imperative that managers understand research methods and data analysis so they can judge the appropriate use of market analytical information and understand its decision value. The objective of this course is to convey the effective application of rigorous marketing analytics to relevant managerial decisions. This course introduces today's most valuable marketing research and analytics methods and tools and offers a best-practice methodology for successful implementation. Hands-on exercises, assignments, and case studies provide students an opportunity to apply the marketing research and analytics techniques for solving key problems ranging from product development, segmentation, pricing, promotion, distribution, campaign management, brand valuation, and digital marketing strategy.

**ACC 731 Accounting Analytics**

This course is built from the premise that technology has changed the role of the accountant. A heightened awareness of systems, technology, and data analysis is becoming increasingly required of individuals in the different accounting fields. Data has proliferated in business, and managers and accountants need to understand the implications for decision-making and tap into the data to provide better insights into a firm/client/customer/supplier, etc. This course is intended to provide students with an understanding of data analytic thinking and terminology as well as hands-on experience with data analytics tools and techniques. Students should leave this course with the skills necessary to translate accounting and business problems into actionable proposals that they can competently present to managers and data scientists. While there will be some use of tools in this course, the focus of this class is on concepts, not algorithms or statistical math. Prerequisite(s): MBA 691

**FIN 732 Financial Analytics**

This course covers a broad overview of finance topics from a data analytics perspective. Students will learn the ins and outs of applied data analysis and a conceptual framework for thinking about data from both a statistical and machine-learning perspective with applications in finance. Students will learn to understand and apply concepts like capturing and analyzing new sources of financial data, building predictive models, and running simulations of market events, using concepts of data analysis and probability in investment science, risk management, valuations, rates of return and profitability analysis. The course aims to provide a theoretical and practical framework in which students will be challenged to solve real-world problems in the finance field and gain familiarity with commonly used stochastic models. Prerequisite(s): MBA 692, MBA 693

**BSA 720 Data Warehousing and Data Mining**

This course focuses on data warehousing and data mining in organizations. Topics covered in the course 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): MBA 693

**BSA 730 Optimization and Simulation**

This course introduces students to decision making and problem solving with simulation and optimization tools and techniques. Students learn to formulate and construct a decision model with spreadsheets and use the optimization tools, Monte Carlo simulation, and sensitivity analysis to generate and interpret solutions. The course covers different types of optimization and simulation models, including linear programming, sensitivity analysis, integer linear programming, goal programming, multiple objective optimization, simulation modeling, and queuing theory. Prerequisite(s): MBA 693

**BSA 740 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. Prerequisite(s): MBA 693

**BSA 700 Business Applications Programming**

This course is designed to introduce students to the principles of business application programming for business analytics using selected high-level languages such as R, Python, and Hadoop. 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. The focus is on accessing data from multiple sources, manipulating different types of programming objects, performing character manipulation, and generating reports. Students will design and develop several computer programs throughout the term. Prerequisite(s): MBA 693

**BSA 710 Systems Analysis and Database Design**

This course is about structured analysis and design methodology for complex business systems. Students become familiar and use Entity Relationship Diagrams, Data Structure Diagrams, Data Flow Diagrams, Data Dictionaries, and Process Specifications to develop Systems Specifications. These specifications are utilized as the blueprint to develop and implement relational databases, and explore the Structured Query Language (SQL) used to manipulate and operate the database. Prerequisite(s): MBA 693

**MBA 820 Information Technology for Decision-Making**

This course is about the manager's responsibilities for problem solving and decision making, and those areas in which information technology can be used to gain the insight needed to support selection of decision alternatives. Students learn about the role of data, information, and knowledge in managerial problem solving and decision making. Transactional processing and database management systems (DBMS) are used to store, manage, and retrieve data in organizations. Decision support system (DSS) tools and technologies (such as natural language programming and influence diagramming) are used to organize data into information for decision analytics. Expert systems (ES) are used to synthesize information into knowledge for knowledge management. Students are required to use DBMS, DSS and ES software packages in a hands-on environment. Prerequisite(s): MBA 693

## Faculty

Dean: Cary A. Caro, Ph.D.

Associate Dean: Michael Moll, M.B.A.

Assistant Dean, Graduate Business Programs: Nicole Blair, M.B.A., M.S.

Professors: Ambrose, Borkowski, Cooper, Fornaciari, Jiang, Tavana, Wentzel

Associate Professors: Chia, Kennedy, Lafond, Leauby, Pierce, Reardon, Szabat, Ugras

Assistant Professors: Adams, Bruce, Coyle, DiPietro, Dynan, Otto, Radetskii

## Program Contact Information

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