

MS BUSINESS ANALYTICS (MSBA)

600 Level Courses

MSBA 601: *Statistics and Software for Business Analytics*. 0 credits.

This asynchronous self-paced course is designed for students to either learn or refresh their knowledge of statistics. It will introduce students to fundamental concepts in statistics and data analysis, utilizing advanced statistical software(s). The goal is to prepare students for core and elective analytics courses in the program. Offered by SBUS Multidisciplinary. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Satisfactory/No Credit scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 610: *Essentials for Business Analytics: From Data Ethics to Data Driven Decision-making*. 3 credits.

This course will provide students with an understanding of the principles of business analytics from data ethics to data driven decision making. To this end, this course seeks to connect business analytics to fundamental decision problems facing organizations in the core business disciplines. Current applications of business analytics by organizations will be examined. Further, with the use of business analytics increasing, the legal, ethical, moral, and social issues surrounding the collection and analysis of data will be discussed. Discussions on data ethics will cover historical and current concerns while maintaining an eye to identifying emerging issues. Lastly, this course explores how to implement processes and practices to incorporate data ethics and utilize communication skills to better inform business decisions with business analytics. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Enrollment limited to students with a class of Graduate, Junior Plus or Senior Plus.

Enrollment limited to students in a Master of Science degree.

Enrollment limited to students in the Costello College of Business college.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 615: *Database Management for Business Analytics*. 3 credits.

Business analytics relies on wide variety of datasets that are maintained transactional databases and/or analytical data sources such as a data warehouse. This course familiarizes the use of Structured Query

Language (SQL) to manage data in transactional databases. SQL coverage includes how to extract data, join tables, aggregations, and perform more complex analysis and data manipulations using subqueries. The course also introduces students to managing and working with analytical data using data warehouse, data cubes, analytical processing of historical data for dimensional analysis and preparation of data for data mining. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Enrollment limited to students with a class of Graduate, Junior Plus or Senior Plus.

Enrollment limited to students in a Master of Science degree.

Enrollment limited to students in the Costello College of Business college.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 618: *Programming for Business Analytics*. 3 credits.

Python is one of the most popular tools used for business analytics. This course introduces students to solving a broad set of data analysis problems using the Python programming language. The course will cover programming fundamentals including variables, object types, loops, conditional statements, and functions. Next, a series of Python library packages are presented for business analytics which involve data loading, data structures, data manipulation and exploratory data analysis. The last portion of the course introduces geospatial analysis and machine learning techniques that cover prediction models and sentiment analysis. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Enrollment limited to students with a class of Graduate, Junior Plus or Senior Plus.

Enrollment limited to students in a Master of Science degree.

Enrollment limited to students in the Costello College of Business college.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 625: *Exploratory Data Analysis and Visualization*. 3 credits.

This course will provide students with an understanding of the principles of exploratory data analysis and visualization. Students will gain the ability to extract trends and understand data and be able to visualize findings effectively. Since Data Visualization is a core component of Business Analytics, students will think critically and learn the practical

skills to communicate effectively using graphical results in order to drive decision making. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Enrollment limited to students with a class of Graduate, Junior Plus or Senior Plus.

Enrollment limited to students in a Master of Science degree.

Enrollment limited to students in the Costello College of Business college.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 639: Supply Chain Analytics. 3 credits.

Supply chain analytics is the process of using data analytics and business intelligence to improve efficiency, and streamline various supply chain and logistics decisions. Efficient management of supply chains requires effective applications of the concepts, tools and techniques that will be introduced in this course. The scope is broad, ranging from strategic supply chain management issues to tactical and planning and control decisions. Several key areas will be covered in this course including inventory control, information sharing, supply chain contracting, network management, transportation analytics, global logistics, omni-channel strategies, and supply chain risk management. It will also address how firms can achieve the digital transformation of their supply chains utilizing analytics, big data and the latest technological developments such as AI, blockchain technology, and IoT. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Business Administration or Business Analytics.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 655: Retailing Analytics. 3 credits.

The retail industry is going through a phenomenal transformation. More retailers are relying on analytics to help manage product assortment decisions, loyalty programs, and in-store, online, and omni-channel environment in order to respond more effectively to changes in consumer behavior. This course teaches students to arrive at strategic retailing decisions using a data-driven approach. The course covers key retailing decisions such as loyalty program design and execution, market basket analysis, store location and trade area analysis, forecasting, and merchandising decisions. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Business Analytics.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 663: Pricing Analytics. 3 credits.

Firms need to find answers for various questions that arise in the context of pricing such as: Which sales channels should the firm use? How should a product be priced in different channels? How can the firm prevent cannibalization across channels? How should prices be adjusted throughout the season or after observing the initial demand? Pricing analytics and revenue management is concerned with having the right prices in place for all the products a firm sells, to all its customers, through all their channels, all the time and is a tactical decision. The most familiar example probably comes from the airline industry, where tickets for the same flight may be sold at many different fares throughout the booking horizon depending on product restrictions as well as the remaining time until departure and the number of unsold seats. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program.

Registration Restrictions:

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Business Analytics.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 692: Practicum in Business Analytics. 3 credits.

This course provides a framework for approaching, successfully completing, and reflecting upon a professional field experience in business analytics. The course is designed for students who will complete a module-long internship to apply classroom knowledge of business analytics in his or her chosen field and to integrate this experience into the overall educational program. The internship must involve an average of 20 hours per week and be approved by the program director. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Business Analytics.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Internship

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 697: Special Topics in Business Analytics. 3 credits.

This course explores contemporary issues and challenges in business analytics. Topics are not covered in the regular MSBA course offerings. Course content may vary each semester. The course may be repeated with change in topic. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program.

Registration Restrictions:

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Business Analytics.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

700 Level Courses**MSBA 738: Data Mining for Business Analytics.** 3 credits.

Data mining—the art of extracting useful information from large amounts of data—is of increasing importance in today's world. The amount of data flowing from, to, and through enterprises of all sorts is enormous, and growing rapidly. Businesses are trying to make effective use of the abundance of data to which they have access: to make better predictions, better decisions, and better strategies. Therefore, managers now need to know about the possibilities and limitations of data mining. This course will introduce data mining problems and tools to enhance managerial decision making. The students will learn how to ask the right questions and how to draw inferences from the data by using the appropriate data mining tools. The students will acquire hands-on experience on applying data mining methods using a data mining software. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit. Equivalent to GBUS 738, MBA 738.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Business Analytics.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 743: Business Forecasting. 3 credits.

Business forecasting is a common activity assisting managers to make informed decisions in a variety of business domains ranging from long

range planning to estimating market demand, stock prices, production planning, labor requirements, and many others. This course addresses a variety of models and methods for producing forecasts based on business data with an emphasis on quantitative methods; focusing on time series and associative (regression) models. These techniques are demonstrated and implemented utilizing computer software. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Business Analytics.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 757: Prescriptive Analytics. 3 credits.

Prescriptive analytics is a fundamental element of business analytics; it builds on descriptions of the present and predictions about the future to determine the best possible course of action. At the core of prescriptive analytics is the idea of analytical modeling and optimization. Analytical modeling entails the identification of the most important factors that contribute to a managerial problem and their incorporation in a mathematical model. Drawing on a variety of optimization methods, decision-makers can use such models to determine optimal strategies and delineate contingencies that can help them manage uncertainty. In addition, "what if" analyses will be used to determine the sensitivity of model solutions to uncertainties in data inputs. The models discussed will be drawn from all business disciplines, and address problems in the government, profit, or not-for-profit sectors. Students will utilize data on these problems to develop models and explore solutions. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Business Analytics.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)

MSBA 795: Business Analytics Applied Capstone. 3 credits.

This course will provide students the framework to work on an applied business analytics project. The objective is for students to work on solving business problems that the client is facing through advanced data analysis. Students will work in groups to understand the business problem, break it down into meaningful questions, identify internal and external data needed to answer the questions, and engage in a data analytics exercise to propose actionable solutions. The course will

involve active interactions with the client. Students will be expected to utilize all the knowledge and skills they have learnt in the earlier courses in the M.S. in Business Analytics program. After completion of this course, students can expect to have completed an applied business analytics project, which they can showcase on their resumes. Offered by Costello College of Business (<https://catalog.gmu.edu/colleges-schools/business/>). May not be repeated for credit.

Recommended Prerequisite: Admission to the Master of Science in Business Analytics program

Registration Restrictions:

Required Prerequisites: (MSBA 610^{B-}, 615^{B-}, 618^{B-}, 625^{B-}, 757^{B-} and 738^{B-}).

^{B-} Requires minimum grade of B-.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Business Analytics.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale. (<https://catalog.gmu.edu/policies/academic/grading/>)