Table of Contents

[Introduction 3](#_Toc6159132)

[Masters of Business Analytics vs Masters of Data Science 4](#_Toc6159133)

[1. Berkeley 4](#_Toc6159134)

[Masters of Business Analytics 4](#_Toc6159135)

[Master of Business Analytics vs Online Master of Data Science 4](#_Toc6159136)

[Master of Business Analytics Course Descriptions 4](#_Toc6159137)

[2. Carnegie Mellon 7](#_Toc6159138)

[Tepper School of Business  **ONLINE MASTER OF SCIENCE IN BUSINESS ANALYTICS** 7](#_Toc6159139)

[**Tepper School of Business Business Analytics MBA Track** 7](#_Toc6159140)

[No Online Masters of Data Science 7](#_Toc6159141)

[Master of Business Analytics vs. MBA Business Analytics Track 7](#_Toc6159142)

[Master of Science in Business Analytics vs on-campus Data Science 9](#_Toc6159143)

[3. Columbia 12](#_Toc6159144)

[Data Science for Executives (EdX) 12](#_Toc6159145)

[Masters of Data Science with Online Options 12](#_Toc6159146)

[Masters of Business Analytics 12](#_Toc6159147)

[Master of Science in Business Analytics vs Online offerings for executives in Data Science (EdX) 12](#_Toc6159148)

[4. Georgia Tech 15](#_Toc6159149)

[The Master of Science in Analytics at Georgia Tech 15](#_Toc6159150)

[Master of Science in Analytics – On Campus 15](#_Toc6159151)

[Master of Science in Analytics - Online 15](#_Toc6159152)

[Prerequisites 15](#_Toc6159153)

[Analytical Tools Track 15](#_Toc6159154)

[Business Analytics Track 15](#_Toc6159155)

[Computational Data Analytics Track 15](#_Toc6159156)

[Track Comparison 16](#_Toc6159157)

[5. Johns Hopkins University 17](#_Toc6159158)

[Online Master of Science in Data Science 17](#_Toc6159159)

[MS IN BUSINESS ANALYTICS AND RISK MANAGEMENT 17](#_Toc6159160)

[Admission Requirements 17](#_Toc6159161)

[Master of Business vs Online Data Science 17](#_Toc6159162)

[6. Massachusetts Institute of Technology (MIT) 20](#_Toc6159163)

[MicroMasters® Program in Statistics and Data Science (EdX) 20](#_Toc6159164)

[Master of Business Analytics 20](#_Toc6159165)

[Targeted Student Population 20](#_Toc6159166)

[Master of Business Analytics vs Online Master Data Science 20](#_Toc6159167)

[7. Southern Methodist University 23](#_Toc6159168)

[Master of Science in Data Science Online 23](#_Toc6159169)

[Master of Science in Machine Learning 23](#_Toc6159170)

[Master of Science Business Analytics 23](#_Toc6159171)

[Master of Business vs Online Master of Data Science 23](#_Toc6159172)

[8. Syracuse University 24](#_Toc6159173)

[Master of Science in Applied Data Science 24](#_Toc6159174)

[Masters of Business Analytics 24](#_Toc6159175)

[Master of Business vs Online Master of Data Science 24](#_Toc6159176)

[9. University of Denver 26](#_Toc6159177)

[Master of Business vs Master of Data Science 26](#_Toc6159178)

[Masters in Business Analytics 26](#_Toc6159179)

[Master of Business vs Online Master of Data Science 26](#_Toc6159180)

[Master of Business vs Master of Data Science 26](#_Toc6159181)

[10. University of Southern California 28](#_Toc6159182)

[Online Master of Data Science 28](#_Toc6159183)

[Masters of Science in Business Analytics 28](#_Toc6159184)

[Targeted Student Population 28](#_Toc6159185)

[Master of Business vs Online Master of Data Science 28](#_Toc6159186)

[11. University of Wisconsin 30](#_Toc6159187)

[Online Master of Data Science 30](#_Toc6159188)

[Master of Science-Business 30](#_Toc6159189)

[Prerequisites 30](#_Toc6159190)

[Master of Business vs Online Master of Data Science 31](#_Toc6159191)

# Introduction

This document presents around ten colleges and universities that offer an online Master of Data Science Degree and an on-campus Master of Business Analyst program. Carnegie Mellon does not have an online Data Science degree, but was included as it has two business analyst programs representing the transition from MBA tracks to a Master of Science offering. This transition seems to be representative of the current state analytics programs.

# Masters of Business Analytics vs Masters of Data Science

## Berkeley

### [Masters of Business Analytics](https://fishercenter.wpengine.com/education/courseoverview/)

[Online Masters of Data Science](https://datascience.berkeley.edu/)

Berkeley does not appear to have an on-campus Master of Data Science program at this time.

The Master of Business Analytics is aligned along the four axes: Business Context, Concepts, Algorithms and Tech Platform. The courses are run from Jupyter Hub at Berkeley. All tracks are offered online or on campus.

### Master of Business Analytics vs Online Master of Data Science

|  |  |
| --- | --- |
| [Masters of Business Analytics](https://fishercenter.wpengine.com/education/courseoverview/) | [Online Masters of Data Science](https://datascience.berkeley.edu/) |
| Marketing Analytics  Big Data and Better Decisions  Decision Models  Descriptive & Predictive Data Mining  Data Science & Data Strategy | Python for Data Science  Research Design and Application for Data and Analysis  Statistics for Data Science  Fundamentals of Data Engineering  Applied Machine Learning  \*\*\* Advanced Courses \*\*\*  Experiments and Causal Inference  Behind the Data: Humans and Values  Deep Learning in the Cloud and at the Edge  Statistical Methods for Discrete Response, Time Series, and Panel Data  Machine Learning at Scale  Natural Language Processing with Deep Learning  Data Visualization  Capstone |

### Master of Business Analytics Course Descriptions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Course | Business Context | Concepts | Algorithms | Tech Platform |
| Marketing Analytics | Customer acquisition, targeting and retention  Experimental design of products and promotions  Search Engine Optimization  Web analytics (marketing) | Descriptive Models  Predictive Models and Inference  Unsupervised Machine Learning  Supervised Machine Learning | Segmentation and Clustering with RFM  Logistic regression  Neural Networks/Deep learning  Discrete Choice models and Full-factorial designs | Jupyter  Notebook +  Python-kernel |
| Big Data & Better Decisions | Health policy  Financial risk management  Impact analysis (economic analysis and policy) | Descriptive Models  Predictive Models and Inference  Supervised Machine Learning | Linear Regression  Logistic Regression  High-dimensional linear models (RIDGE, LASSO)  Tree models and random forests | Jupyter Notebook w/ R-kernel |
| **Decision Models** | Revenue Management  Financial Planning  Resource Allocation (operations, marketing, finance and accounting) | Prescriptive Models  Constrained Optimization  Decision Analysis  Simulation and Optimization | Linear Programming  Mixed Integer Linear Programming  Bayesian Analysis and Decision Trees  Monte Carlo Simulation | Excel  Analytic Solver Plug-In |
| **Descriptive & Predictive Data Mining** | Financial Reporting  Resource Allocation  Workplace analytics  Web analytics  Electoral politics and voter targeting | Descriptive Models  Predictive Models and Inference  Descriptive Statistics  Unsupervised Machine Learning  Supervised Machine Learning | k-Means clustering  Association Rules  k-NN classification  rule-based decision tree classification | Excel  Analytic Solver Plug-In |
| Data Science & Data Strategy | Business strategy  Problems in marketing, operations, workforce management, and finance through the lens of data and machine intelligence. | High-level survey of several different methods in unsupervised and supervised machine learning; an emphasis on the business context and exploiting firm data for strategic advantage. |  | **BigML Proprietary SaaS Application Excel** |

## Carnegie Mellon

### [Tepper School of Business  **ONLINE MASTER OF SCIENCE IN BUSINESS ANALYTICS**](https://analytics.tepper.cmu.edu/)

### [**Tepper School of Business Business Analytics MBA Track**](https://www.cmu.edu/tepper/programs/mba/curriculum/tracks/business-analytics.html)

### No Online Masters of Data Science

Carnegie Mellon does not have an online Data Science Masters program. It does have a very nice online Master of Business Analytics program. The MBA analytics program is demonstrated against the online Master of Data Science below

### Master of Business Analytics vs. MBA Business Analytics Track

|  |  |
| --- | --- |
| [Master of Science in Business Analytics](https://msba.engineering.columbia.edu/) | [**Tepper School of Business Business Analytics MBA Track**](https://www.cmu.edu/tepper/programs/mba/curriculum/tracks/business-analytics.html) |
| Mathematics for Business Analytics (0-credit)  Optimization Models and Methods  Probability, Statistics and Simulation  Tools for Analytics  Data Analytics  Professional Development Leadership (0-credit)  Business Analytics  Analytics in Practice  ***Tracks \* Financial, Health Care, Marketing,Algorithms …***  ***\*\*\*\* Track - Financial Analytics***  Managerial Negotiations  Quantitative Pricing and Revenue Analytics  Computing for Business Research  Stochastic Models  Applications Programming for Financial Engineering  Machine Learning for Financial Engineering & Operations Research  Technology Innovation in Financial Services (1.5)  Deep Learning  Big Data in Finance  Pricing Strategies  Data Driven Dollars  Track - Marketing Analytics  Game-Theoretic Business Strategy  Demand and Supply Analytics  Sports Analytics  Managerial Negotiations  Computing for Business Research  Online Marketplaces  Game Theoretic Models of Operations  Designing Digital Operating Models  OR Methods in Marketing (1.5)  Dynamic Pricing and Revenue Management  Strategic Consumer Insights  ***\*\*\*\*Track - Marketing Research & Analytics***  Digital Marketing  Marketing Models  Developing QI: Responsive Decision Making Through Quantitative Intuition  New Product Development  Data Driven Dollars  Mathematical Models in Marketing  Marketing Analytics  ***\*\*\*\* Track - Healthcare Analytics***  Service Operations  Healthcare Investment and Entrepreneurship HCIT and Services  Digital Healthcare Startups  Managerial Negotiations  US Healthcare System  Production and Operations Management  Scheduling  Applied Systems Engineering  Systems Engineering Tools and Methods (OR)  Data Mining for Engineers  Operations Research in Public Policy  Healthcare Operations Management  Developing QI: Responsive Decision Making Through Quantitative Intuition  ***\*\*\*\* Track - Analytics Algorithms and Methodology***  Introduction to Databases  Analysis of Algorithms  Analytics for Business Research  Big Immersion Seminar - Big Data (1.5 pts)  Applied Statistics and Data Analytics  Managerial Negotiations  Computational Discrete Optimization  Machine Learning for Financial Engineering & Operations Research  Game Theoretic Models of Operations  Transportation Analytics and Logistics  Analytics on the Cloud  Data Mining for Engineers  Applied Multivariate Statistics  Experimental Design & Analysis for Behavioral Research  Bayesian Modeling & Computation | DESCRIPTIVE (must choose at least two courses)  45- 881 Modern Data Management Mini 3 Required  45- 980 Big Data Mini 1 Elective  45- 830 Marketing Research Mini 3 Elective  PREDICTIVE (must choose at least two courses)  45- 851 Data Mining Mini 4 Required  45- 855 Statistical Applications in Management Mini 4 Elective  45- 912 Business Forecasting with Time Series Models Mini 4 Elective  45- 930 The Art and Science of Prediction Mini 4 Elective  45- 936 Marketing Analytics Mini 2 Elective  PRESCRIPTIVE (must choose at least two courses)  45- 850 Applications of Operations Research Mini 1 Required  45- 950 Operations Research Implementations Mini 3 Elective  45- 852 Optimization Methods in Finance Mini 3 Elective  45- 853 Optimization for Interactive Marketing Mini 2 Elective  45- 854 Optimization Models for Operations Mini 2 Elective  45- 860 Demand Management and Price Optimization Mini 1 Elective  APPLICATIONS (must choose at least one course)  45- 872 Technology Strategy Mini 4 Elective  45- 880 Strategic IT Mini 1 Elective  45- 934 Interactive Marketing Mini 4 Elective  45- 882 Digital Marketing and Social Media Strategy Mini 3 Elective  45- 951 Business Networks Mini 2 Elective 45- 828 FinTech Mini 4 Elective  INTEGRATIVE - CAPSTONE  45-959 Business Analytics Project Year 2, Spring Required |

### Master of Science in Business Analytics vs on-campus Data Science

Business Analytics has several tracks: Financial, Health Care, Marketing, Algorithms

|  |  |
| --- | --- |
| [Master of Science in Business Analytics](https://msba.engineering.columbia.edu/) | [Data Science](https://datascience.columbia.edu/master-of-science-in-data-science) |
| Mathematics for Business Analytics (0-credit)  Optimization Models and Methods  Probability, Statistics and Simulation  Tools for Analytics  Data Analytics  Professional Development Leadership (0-credit)  Business Analytics  Analytics in Practice  ***Tracks \* Financial, Health Care, Marketing,Algorithms …***  ***\*\*\*\* Track - Financial Analytics***  Managerial Negotiations  Quantitative Pricing and Revenue Analytics  Computing for Business Research  Stochastic Models  Applications Programming for Financial Engineering  Machine Learning for Financial Engineering & Operations Research  Technology Innovation in Financial Services (1.5)  Deep Learning  Big Data in Finance  Pricing Strategies  Data Driven Dollars  Track - Marketing Analytics  Game-Theoretic Business Strategy  Demand and Supply Analytics  Sports Analytics  Managerial Negotiations  Computing for Business Research  Online Marketplaces  Game Theoretic Models of Operations  Designing Digital Operating Models  OR Methods in Marketing (1.5)  Dynamic Pricing and Revenue Management  Strategic Consumer Insights  ***\*\*\*\*Track - Marketing Research & Analytics***  Digital Marketing  Marketing Models  Developing QI: Responsive Decision Making Through Quantitative Intuition  New Product Development  Data Driven Dollars  Mathematical Models in Marketing  Marketing Analytics  ***\*\*\*\* Track - Healthcare Analytics***  Service Operations  Healthcare Investment and Entrepreneurship HCIT and Services  Digital Healthcare Startups  Managerial Negotiations  US Healthcare System  Production and Operations Management  Scheduling  Applied Systems Engineering  Systems Engineering Tools and Methods (OR)  Data Mining for Engineers  Operations Research in Public Policy  Healthcare Operations Management  Developing QI: Responsive Decision Making Through Quantitative Intuition  ***\*\*\*\* Track - Analytics Algorithms and Methodology***  Introduction to Databases  Analysis of Algorithms  Analytics for Business Research  Big Immersion Seminar - Big Data (1.5 pts)  Applied Statistics and Data Analytics  Managerial Negotiations  Computational Discrete Optimization  Machine Learning for Financial Engineering & Operations Research  Game Theoretic Models of Operations  Transportation Analytics and Logistics  Analytics on the Cloud  Data Mining for Engineers  Applied Multivariate Statistics  Experimental Design & Analysis for Behavioral Research  Bayesian Modeling & Computation | PROBABILITY AND STATISTICS FOR DATA SCIENCE  ALGORITHMS FOR DATA SCIENCE  STATISTICAL INFERENCE AND MODELING  COMPUTER SYSTEMS FOR DATA SCIENCE  MACHINE LEARNING FOR DATA SCIENCE  EXPLORATORY DATA ANALYSIS AND VISUALIZATION  DATA SCIENCE CAPSTONE AND ETHICS  \*\*\*\*One Data Science Elective (choose 1).  Inference and Representation  Deep Learning  Natural Language Processing with Representation Learning  Natural Language Understanding and Computational Semantics  Optimization-based Data Analysis  Optimization and Computational Linear Algebra  Pre-approved Elective Information |

## Columbia

### [Data Science for Executives](https://datascience.columbia.edu/columbia-and-edx-launch-online-data-science-education-series) (EdX)

### [Masters of Data Science with Online Options](https://datascience.columbia.edu/data-science-academics)

### [Masters of Business Analytics](https://msba.engineering.columbia.edu/)

Columbia University Data Science Institute offers interdisciplinary data science graduate programs with part-time, full-time and online study options.

### Master of Science in Business Analytics vs Online offerings for executives in Data Science (EdX)

|  |  |
| --- | --- |
| [Master of Science in Business Analytics](https://msba.engineering.columbia.edu/) | [**Online Courses in the**Data Science for Executives program](https://datascience.columbia.edu/data-science-online-courses) |
| Mathematics for Business Analytics (0-credit)  Optimization Models and Methods  Probability, Statistics and Simulation  Tools for Analytics  Data Analytics  Professional Development Leadership (0-credit)  Business Analytics  Analytics in Practice  ***Tracks \* Financial, Health Care, Marketing,Algorithms …***  ***\*\*\*\* Track - Financial Analytics***  Managerial Negotiations  Quantitative Pricing and Revenue Analytics  Computing for Business Research  Stochastic Models  Applications Programming for Financial Engineering  Machine Learning for Financial Engineering & Operations Research  Technology Innovation in Financial Services (1.5)  Deep Learning  Big Data in Finance  Pricing Strategies  Data Driven Dollars  Track - Marketing Analytics  Game-Theoretic Business Strategy  Demand and Supply Analytics  Sports Analytics  Managerial Negotiations  Computing for Business Research  Online Marketplaces  Game Theoretic Models of Operations  Designing Digital Operating Models  OR Methods in Marketing (1.5)  Dynamic Pricing and Revenue Management  Strategic Consumer Insights  ***\*\*\*\*Track - Marketing Research & Analytics***  Digital Marketing  Marketing Models  Developing QI: Responsive Decision Making Through Quantitative Intuition  New Product Development  Data Driven Dollars  Mathematical Models in Marketing  Marketing Analytics  ***\*\*\*\* Track - Healthcare Analytics***  Service Operations  Healthcare Investment and Entrepreneurship HCIT and Services  Digital Healthcare Startups  Managerial Negotiations  US Healthcare System  Production and Operations Management  Scheduling  Applied Systems Engineering  Systems Engineering Tools and Methods (OR)  Data Mining for Engineers  Operations Research in Public Policy  Healthcare Operations Management  Developing QI: Responsive Decision Making Through Quantitative Intuition  ***\*\*\*\* Track - Analytics Algorithms and Methodology***  Introduction to Databases  Analysis of Algorithms  Analytics for Business Research  Big Immersion Seminar - Big Data (1.5 pts)  Applied Statistics and Data Analytics  Managerial Negotiations  Computational Discrete Optimization  Machine Learning for Financial Engineering & Operations Research  Game Theoretic Models of Operations  Transportation Analytics and Logistics  Analytics on the Cloud  Data Mining for Engineers  Applied Multivariate Statistics  Experimental Design & Analysis for Behavioral Research  Bayesian Modeling & Computation | DS101XSelf-Paced Statistical Thinking for Data Science and Analytics  DS102XSelf-Paced Machine Learning for Data Science and Analytics  DS103XSelf-PacedEnabling Technologies for Data Science and Analytics: The Internet of Things |

## Georgia Tech

### [The Master of Science in Analytics at Georgia Tech](https://www.analytics.gatech.edu/)

### [Master of Science in Analytics – On Campus](http://catalog.gatech.edu/programs/analytics-ms/)

### [Master of Science in Analytics - Online](https://pe.gatech.edu/sites/pe.gatech.edu/files/Mkg-LPs/OMSA/omsa_course_list.pdf)

Georgia Tech does not have the Master of Science in the Business School. Business Analytics is one of three tracks offered by an interdisciplinary board. The tracks offered are: Analytic Tools, Business Analytics and Computational Data Analytics.

### Prerequisites

1. Interest in analytics, and a high level of ability that has been demonstrated within past performance on appropriate coursework and/or industry experience as well as standardized testing (GRE or GMAT);
2. Basic mathematical background - at least one college-level course in each of calculus, basic linear algebra, and probability and statistics;
3. Basic computing background - at least one college-level course (or equivalent basic knowledge) in computer programming using a high-level language such as Python;
4. A bachelor’s degree or equivalent; and
5. Institute requirements for admission to graduate study.

### Analytical Tools T­rack

The Analytical Tools track provides students with a greater knowledge and understanding of the quantitative methodology of descriptive, predictive, and prescriptive analytics: how to select, build, solve, and analyze models using methodology such as parametric and non-parametric statistics, regression, forecasting, data mining, machine learning, optimization, stochastics, and simulation.

### Business Analytics Track

The Business Analytics track provides students with a deeper understanding of the practice of using analytics in business and industry: how to understand, frame, and solve problems in marketing, operations, finance, management of information technology, human resources, and accounting in order to develop and execute analytics projects within businesses.

### Computational Data Analytics Track

The Computational Data Analytics track provides students with a deeper understanding of the practice of dealing with so-called “big data”: how to acquire, preprocess, store, manage, analyze, and visualize data arriving at high volume, velocity, and variety.

### Track Comparison

|  |  |  |
| --- | --- | --- |
| Analytical Tools | Business Analytics | Computational |
| Fall  CSE 6040 Computing for Data Analysis  MGT 8803 Introduction to Business for Analytics  ISyE 6414 Regression Analysis  ISyE 6669 Deterministic Optimization  ISyE 6650 Probabilistic Models  SyE 6664 Simulation  ISyE 6420 Bayesian Statistics  Spring  ISyE 7406 Data Mining and Statistical Learning  MGT 6203 Data Analytics in Business  CSE 6242 Data and Visual Analytics  CSE/ISyE 6740 Computational Data Analytics  MGT 6400 Pricing Analytics and Revenue Management  ISyE 6402 Time Series Analysis  CSE 6220 High Performance Computing | Fall  FCSE 6040 Computing for Data Analytics  ISyE 8803 Introduction to Analytics Models  ISyE 6414 Regression Analysis  ISyE 6334 Operations Research II  MGT 8803 Risk Analytics  ISyE 6664 Simulation  MGT 6450 Project Management  Spring  SyE 6402 Time Series Analysis  MGT 6203 Data Analytics in Business  CSE 6242 Data and Visual Analytics  MGT 6310 Marketing Research  MGT 6400 Pricing Analytics and Revenue Management  SyE 6402 Time Series Analysis  MGT 6304 Customer Relationship Management | Fall  MGT 8803 Introduction to Business for Analytics  ISyE 8803 Introduction to Analytics Models  ISyE 6414 Regression Analysis  ISyE 6333 Operations Research I  CSE 6141 Massive Graph Analytics  CSE/ISyE 6740 Computational Data Analytics  ISyE 6664 Simulation  CSE 6230 High Performance Parallel Computing  Spring  CSE/ISyE 6740 Computational Data Analytics  MGT 6203 Data Analytics in Business  CSE 6242 Data and Visual Analytics  CSE/ECE 6730 Modeling and Simulation  CSE 6240 Web Search and Text Mining  ISyE 7406 Data Mining and Statistical Learning  CSE 6240 Web Search and Text Mining  MGT 6400 Pricing Analytics and Revenue |

## Johns Hopkins University

### [Online Master of Science in Data Science](https://ep.jhu.edu/programs-and-courses/programs/data-science)

### [MS IN BUSINESS ANALYTICS AND RISK MANAGEMENT](https://carey.jhu.edu/programs/master-science/ms-business-analytics-risk-management/)

### Admission Requirements

* You must meet the [general admission requirements](https://ep.jhu.edu/admissions-and-financial-aid/admissions/admission-requirements) that pertain to all master's degree candidates.
* your prior education must include the following prerequisites: (1) multivariate calculus; (2) discrete mathematics; (3) courses in Java or C++ (note that actual competency in Java is expected and that Python can be accepted on a case-by-case basis); and (4) a course in data structures. Linear Algebra or Differential Equations will be accepted in lieu of Discrete Mathematics. A grade of B− or better must have been earned in each of the prerequisite courses.

### Master of Business vs Online Data Science

|  |  |
| --- | --- |
| [MS IN BUSINESS ANALYTICS AND RISK MANAGEMENT](https://carey.jhu.edu/programs/master-science/ms-business-analytics-risk-management/) | [Online Master of Science in Data Science](https://ep.jhu.edu/programs-and-courses/programs/data-science) |
| **Business Foundations (18 credits)**   * BU.210.620 Accounting and Financial Reporting * BU.913.610 Business Analytics * BU.120.601 Business Communication * BU.131.601 Business Leadership and Human Values * BU.231.620 Corporate Finance * BU.350.620 Information Systems * BU.410.620 Marketing Management * BU.680.620 Operations Management * BU.510.601 Statistical Analysis   **Functional Core (6 credits)**   * BU.520.620 Advanced Business Analytics * BU.510.650 Data Analytics * BU.610.625 Simulation and Strategic Options   **Quantitative Electives (Students choose 2 courses, 4 credits)**   * BU.520.710 Big Data Machine Learning * BU.232.650 Continuous Time Finance * BU.450.760 Customer Analytics * BU.330.780 Data Science and Business Intelligence * BU.520.650 Data Visualization * BU.610.630 Pricing and Insuring Risk * BU.450.740 Retail Analytics   **General Electives (Students choose 4 courses, 8 credits)**   * BU.132.601 Business Law * BU.610.730 Contracting: Incentive Design and Analytics * BU.231.720 Corporate Governance * BU.610.705 Crisis Management * BU.330.730 Cybersecurity * BU.520.701 Enterprise Risk Management Frameworks * BU.230.750 Financial Crises and Contagion * BU.610.750 Global Supply Chain Management * BU.300.620 Managing Complex Projects * BU.230.730 Managing Financial Risk | PREREQUISITE COURSES  605.101 - Introduction to Python  605.201 - Introduction to Programming Using Java  605.202 - Data Structures  605.203 - Discrete Mathematics  625.201 - General Applied Mathematics  625.250 - Multivariable and Complex Analysis  625.251 - Introduction to Ordinary and Partial Differential Equations  **FOUNDATION COURSES**  **625.603 - Statistical Methods and Data Analysis**  **685.621 - Algorithms for Data Science**  **REQUIRED COURSES**  **685.648 - Data Science**  **605.662 - Data Visualization**  **625.661 - Statistical Models and Regression**  **AND ONE OF THE FOLLOWING:**  **605.641 - Principles of Database Systems**  **605.649 - Introduction to Machine Learning**  **AND ONE OF THE FOLLOWING:**  **625.615 - Introduction to Optimization**  **625.664 - Computational Statistics**  **ELECTIVES**  **SELECT ONE**  **605.741 - Large-Scale Database Systems**  **605.746 - Advanced Machine Learning**  **605.748 - Semantic Natural Language Processing**  **605.788 - Big Data Processing Using Hadoop**  **SELECT ONE**  **625.714 - Introductory Stochastic Differential Equations with Applications**  **625.721 - Probability and Stochastic Process I**  **625.722 - Probability and Stochastic Process II**  **625.725 - Theory of Statistics I**  **625.726 - Theory of Statistics II**  **625.734 - Queuing Theory with Applications to Computer Science**  **625.740 - Data Mining**  **625.741 - Game Theory**  **625.743 - Stochastic Optimization and Control**  **625.744 - Modeling, Simulation, and Monte Carlo**  **ADDITIONAL SELECTIONS**  **605.625 - Probabilistic Graphical Models**  **605.628 - Applied Topology**  **605.632 - Graph Analytics**  **605.633 - Social Media Analytics**  **605.635 - Cloud Computing**  **605.647 - Neural Networks**  **605.649 - Introduction to Machine Learning**  **605.724 - Applied Game Theory**  **605.725 - Queuing Theory with Applications to Computer Science**  **605.726 - Game Theory**  **625.601 - Real Analysis**  **625.609 - Matrix Theory**  **625.611 - Computational Methods**  **625.620 - Mathematical Methods for Signal Processing**  **625.623 - Introduction to Operations Research: Probabilistic Models**  **625.633 - Monte Carlo Methods**  **625.636 - Graph Theory**  **625.638 - Neural Networks**  **625.641 - Mathematics of Finance: Investment Science**  **625.642 - Mathematics of Risk, Options, and Financial Derivatives**  **625.662 - Design and Analysis of Experiments**  **625.663 - Multivariate Statistics and Stochastic Analysis**  **625.665 - Bayesian Statistics**  **625.680 - Cryptography**  **625.687 - Applied Topology**  **625.690 - Computational Complexity and Approximation**  **625.692 - Probabilistic Graphical Models**  **625.695 - Time Series Analysis and Dynamic Modeling**  **625.717 - Advanced Differential Equations: Partial Differential Equations**  **625.718 - Advanced Differential Equations: Nonlinear Differential Equations and Dynamical Systems**  **625.728 - Theory of Probability**  **INDEPENDENT STUDY**  **685.795 - Capstone Project in Data Science**  **685.801 - Independent Study in Data Science I**  **685.802 - Independent Study in Data Science II** |

## Massachusetts Institute of Technology (MIT)

### [MicroMasters® Program in Statistics and Data Science](https://www.edx.org/micromasters/mitx-statistics-and-data-science) (EdX)

### [Master of Business Analytics](https://mitsloan.mit.edu/master-of-business-analytics)

### Targeted Student Population

|  |  |
| --- | --- |
| [Business Analytics](https://mitsloan.mit.edu/master-of-business-analytics#tour-welcome) | [Online MS Data Science](https://www.edx.org/micromasters/mitx-statistics-and-data-science) |
| The program is tailored for current students or recent college graduates who plan to pursue a career in the data science industry, as well as those seeking career advancement or change, especially engineers, mathematicians, physicists, computer programmers, and other high-tech professionals.  The Master of Business Analytics Program qualifies as a STEM-designated program, allowing international students to extend their training in the U.S. by 24 months after graduating. | .  No Information given |

### Master of Business Analytics vs Online Master Data Science

|  |  |
| --- | --- |
| [Business Analytics](https://www.masterstudies.com/Master-of-Business-Analytics/USA/MITSloanSchoolofManagement/) | [Online MS Data Science](https://www.edx.org/micromasters/mitx-statistics-and-data-science) EdX |
| **Core Subjects**   * Applied Probability and Stochastic Models (15.073J, 12 units) * Optimization Methods (15.093J, 12 units) * Analytics Lab (15.572, 9 units) * Machine Learning (15.095, 12 units) * From Analytics to Action (15.681, H2, 6 units) * Analytics Capstone (15.089, 24 units) * Communicating with Data (15.286, 3 units) * The Analytics Edge (15.071, 12 units)   **Seminar (during SIP)**   * Analytics Tools & Communication & Leadership Skills Workshop (15.003, 3 units)   **Approved Electives (3 to be chosen)**  tudents select 27-48 units from the list of approved electives below:   * Nonlinear Optimization (15.084J, 12 units, spring) * Robust Modeling, Optimization, and Computation (15.094J, 12 units, spring) * Media Ventures (15.376J, 9 units, spring) * Investment Management (15.439, 9 units, spring) * Analytics of Finance (15.450, 12 units, spring) * Algorithmic Trading and Quantitative Investment Strategies (15.487, 9 units, spring) * The Economics of Information: Strategy, Structure, and Pricing (15.567, 6 units, fall) * Digital Marketing and Social Media Analytics (15.570, 6 units, fall) * Enterprise Transformations in the Digital Economy (15.571, 9 units, spring) * Introduction to Operations Management (15.761, 9 units, fall) * Supply Chain Planning (15.762J, 6 units, spring) * The Theory of Operations Management (15.764J, 12 units, spring) * Logistics Systems (15.770J, 12 units, fall) * The Analytics of Ops Management (15.774, 12 units, fall) * Marketing Management (15.810, 9 units, spring) * Product Management (15.828, 9 units, spring) * Marketing Analytics (15.841, 9 units, spring) * Consumer Behavior (15.847, 9 units, spring) * Introduction to System Dynamics (15.871, 6 units, fall) * Innovation Strategy (15.910, 6 units, spring) * Special Subject: Design (4.S02) * Network Science and Models (6.268, 12 units, spring) * Statistical Learning Theory and Applications (6.860J, 12 units, fall) * Applied Machine Learning (6.862, 12 units, spring) * Machine Learning (6.867, 12 units, fall) * Matrix Methods in Data Analysis, Signal Processing, and Machine Learning (18.0651, 12 units, spring)   Subject listings are intended to provide a window into MIT offerings. Names, numbers, instructors, and descriptions are subject to change. For the most up-to-date information, please see the MIT subject catalog.  **Analytics Capstone Project** | [**Probability - The Science of Uncertainty and Data**](https://www.edx.org/course/probability-the-science-of-uncertainty-and-data-0)  [**Data Analysis in Social Science—Assessing Your Knowledge**](https://www.edx.org/course/data-analysis-in-social-scienceassessing-your-knowledge)  [**Fundamentals of Statistics**](https://www.edx.org/course/fundamentals-of-statistics)  [**Machine Learning with Python: from Linear Models to Deep Learning**](https://www.edx.org/course/machine-learning-with-python-from-linear-models-to-deep-learning)  [**Capstone Exam in Statistics and Data Science**](https://www.edx.org/course/capstone-exam-in-statistics-and-data-science-0) |

## Southern Methodist University

### [Master of Science in Data Science Online](https://datascience.smu.edu/about/)

### [Master of Science in Machine Learning](https://datascience.smu.edu/academics/machine-learning-specialization/)

### [Master of Science Business Analytics](https://datascience.smu.edu/academics/business-analytics-specialization/)

Southern Methodist offers a Masters of Data Science for both Business Analytics and Machine Learning. Both tracks are online.

### Master of Business vs Online Master of Data Science

|  |  |
| --- | --- |
| [Master of Science Business Analytics](https://datascience.smu.edu/academics/business-analytics-specialization/) | [Master of Science in Machine Learning](https://datascience.smu.edu/academics/machine-learning-specialization/) |
| Core Courses  Statistical Foundations for Data Science  Doing Data Science  Applied Statistics: Inference and Modeling  File Organization & Database Management  Data and Network Security  Data Mining  Visualization of Information  Quantifying the World  Electives  Business Intelligence  Time Series Analysis with R | Core Courses  Statistical Foundations for Data Science  Doing Data Science  Applied Statistics: Inference and Modeling  File Organization & Database Management  Data and Network Security  Data Mining  Visualization of Information  Quantifying the World  Electives  Machine Learning  Natural Language Processing |

## Syracuse University

## 

### [Master of Science in Applied Data Science](https://ischoolonline.syr.edu/graduate-programs/applied-data-science/)

### [Masters of Business Analytics](https://whitman.syr.edu/programs-and-academics/programs/ms/Business-Analytics/index.aspx)

### Master of Business vs Online Master of Data Science

|  |  |
| --- | --- |
| [Masters of Business Analytics](https://whitman.syr.edu/programs-and-academics/programs/ms/Business-Analytics/index.aspx) | [Master of Science in Applied Data Science](https://ischoolonline.syr.edu/graduate-programs/applied-data-science/) |
| Data Analysis & Decision Making  Business Analytics  Analytics Applications Core (6 credits - select 2)  Accounting Analytics  Marketing Analytics  Financial Analytics  Principles of Management Science  Analytics Depth Core (6 credits - select 2)  Linear Statistical Models  Time Series Modeling and Analysis  Customer Relationship Management with SAP  Applied Data Science  Advanced Data Analytics  Statistical Methods in Information Science and Technology  Data Mining  Basics of Information Retrieval Systems  Information Visualization  Data Warehouse  Research Methods in Information Science and Technology  Introduction to Database Management Systems  Analytical Data Mining  Analytics Electives (18 credits - 6 select courses)  Data Base Administration Concepts & DB Mgt  Natural Language Processing  Object-oriented programming in C++  Introduction to Artificial Intelligence  Explorations in Computing & Programming  Artificial Neural Networks  Software Engineering  Simulation and Modeling  Additional Approved Graduate Business or Analytics Courses From Schools and Colleges at Syracuse University  Students must pass a comprehensive exam at the end of the last semester of the program. | Introduction to Data Science  Data Administration Concepts and Database Administration  Data Analytics  Data Analysis and Decision Making  Business Analytics  Big Data Analytics  Analytics Application Core Courses – 3 to 6 units  Accounting Analytics  Marketing Analytics  Financial Analytics  Principles of Management Science  Electives – 12 to 15 units  Scripting for Data Analysis  Natural Language Processing  Information Visualization  Data Warehousing  Text Mining  Advanced Database Management  Portfolio Milestone |

## University of Denver

### [Master of Business vs Master of Data Science](https://ritchieonline.du.edu/data-science/)

### [Masters in Business Analytics](https://daniels.du.edu/business-information-analytics/masters/)

### Master of Business vs Online Master of Data Science

|  |  |
| --- | --- |
| [Masters in Business Analytics](https://daniels.du.edu/business-information-analytics/masters/) | [Master of Business vs Master of Data Science](https://ritchieonline.du.edu/data-science/) |
| INFO 4100 Business Intelligence | 4 Credit Hours   * INFO 4140 Business Databases | 4 Credit Hours» * INFO 4120 Python for Business Analytics» * STAT 4610 Business Statistics | 4 Credit Hours» * INFO 4590 Optimization | 4 Credit Hours» * INFO 4200 Capstone Planning | 2 Credit Hours * INFO 4240 Data Warehousing | 4 Credit Hours» * INFO 4280 Project Management | 4 Credit Hours» * INFO 4300 Predictive Analytics | 4 Credit Hours» * INFO 4340 Data Mining & Visualization | 4 Credit Hours» * INFO 4360 Complex Data Analytics | 4 Credit Hours» * INFO 4380 Decision Processes | 4 Credit Hours» * INFO 4400 Capstone | 4 Credit Hours | Introduction to Python  Mathematics for Data Science 1  Mathematics for Data Science 2  Introduction to Algorithms  Machine Learning  Parallel and Distributed Systems |

## University of Southern California

### [Online Master of Data Science](https://online.usc.edu/programs/master-of-science-in-computer-science-data-science/)

### [Masters of Science in Business Analytics](https://www.marshall.usc.edu/programs/specialized-masters-programs/master-science-business-analytics/admissions)

### Targeted Student Population

|  |  |
| --- | --- |
| [Business Analytics](https://www.marshall.usc.edu/programs/specialized-masters-programs/master-science-business-analytics/curriculum) | [Online MS Data Science](http://catalogue.usc.edu/preview_program.php?catoid=8&poid=10302&returnto=2297) |
| A few years of work experience is preferred, but not required.  The program is designed for managers who want to develop or sharpen their analytical skills, and recent college graduates with strong analytical backgrounds eager to make their mark in business analytics and data sciences. | This degree is designed for students that have a strong math and science background, but may not have much training in computer science. Students will learn the basics of data science, including data formats, tools and techniques. They learn how to build data processing programs in Python, and they will learn how to apply the latest analytical tools through hands-on homeworks and projects. |

### Master of Business vs Online Master of Data Science

|  |  |
| --- | --- |
| [Business Analytics](https://www.marshall.usc.edu/programs/specialized-masters-programs/master-science-business-analytics/curriculum) | [Online MS Data Science](http://catalogue.usc.edu/preview_program.php?catoid=8&poid=10302&returnto=2297) |
| DSO 510\* Business Analytics  GSBA 545\* Data Driven Decision Making  GSBA 542\* Communication for Management  DSO 530 Applied Modern Statistical Learning Methods  DSO 545\* Statistical Computing and Data Visualization  DSO 570 The Analytics Edge: Data, Models, and Effective Decisions  DSO 573 Data Analytics Driven Dynamic Strategy and Execution  DSO 552\* SQL Databases for Business Analysts  DSO 553 NoSQL Databases in Big Data- Hide  \*\*\* ELECTIVES  DSO 516 Probability and Data Modeling  DSO 522 Applied Time Series Analysis for Forecasting  DSO 528 Data Warehousing, Business Intelligence and Data Mining  DSO 534 Discrete-Event Simulation for Process Management  DSO 536 Monte Carlo Simulation and Decision Models  DSO 547 Designing Spreadsheet-Based Business Models  DSO 562 Fraud Analytics  DSO 566 Marketing Analytics  INF 520 Foundations of Information Security  MKT 536 Pricing Strategies  DSO 574 Getting Ready for Big Data  DSO 599\* Digital Analytics Strategy  DSO 599\* Healthcare Analytics  DSO 599\* Game Data Analytics  DSO 599\* Text Analytics and Natural Language Processing  DSO 599\* Artificial Intelligence for Business  DSO 599\* Supply Chain Analytics | Core Courses  INF 510 Principles of Programming for Informatics  INF 549 Introduction to Computational Thinking and Data Science  INF 550 Overview of Data Informatics in Large Data Environments  INF 551 Foundations of Data Management  INF 552 Machine Learning for Data Informatics  INF 553 Foundations and Applications of Data Mining  \*\*\* One of interface/visualization classes:  INF 554 Information Visualization Units: 4  INF 555 User Interface Design, Implementation, and Testing Units: 4  INF 556 User Experience Design and Strategy Units: 4  Electives \*\*  CSCI 544 Applied Natural Language Processing  CSCI 550 Advanced Data Stores  CSCI 570 Analysis of Algorithms  CSCI 572 Information Retrieval and Web Search Engines  INF 529 Security and Privacy in Informatics  INF 558 Building Knowledge Graphs  INF 560 Data Informatic |

## University of Wisconsin

## 

### [Online Master of Data Science](https://datasciencedegree.wisconsin.edu/data-science-program/)

### [Master of Science-Business](https://wsb.wisc.edu/programs-degrees/masters/business-analytics/program-overview)

### Prerequisites

|  |  |
| --- | --- |
| [Business Analytics](https://wsb.wisc.edu/programs-degrees/masters/business-analytics/program-overview) | [Online MS Data Science](https://datasciencedegree.wisconsin.edu/data-science-program/data-science-courses/) |
| 1. Applicants must demonstrate knowledge of business fundamentals, completed or expected completion, by start of program. Coursework can be completed at any accredited university or college.  Applicants may fulfill this requirement in **one** of the following ways:     * Undergraduate degree with business major or minor    * A Certificate in Business    * A minimum 3.0 GPA in intermediate college coursework covering at least two of these business disciplines:      + Marketing      + Operations      + Finance      + Accounting      + Management    * General Business 310 or 311 at UW-Madison. Applicants may complete these courses online, starting in June, as a special student.    * ***At least one year of full-time work experience in one of the business disciplines mentioned above*** 2. Completion of one semester of business calculus or equivalent. | \*\*\* Prerequisites \*\*\*  Elementary statistics  Introduction to programming  Introduction to databases  ***Ideal candidates will have a background in math, statistics, analytics, computer science, or marketing, or three to five years of professional experience*** |

### Master of Business vs Online Master of Data Science

|  |  |
| --- | --- |
| [Business Analytics](https://wsb.wisc.edu/programs-degrees/masters/business-analytics/program-overview) | [Online MS Data Science](https://datasciencedegree.wisconsin.edu/data-science-program/data-science-courses/) |
| GEN BUS 656 – Machine Learning for Business Analytics (3 credits)  GEN BUS 705 – Statistics and Programming for Business Analytics (3 credits)  GEN BUS 720 – Data Visualization for Business Analytics (1 credit)  GEN BUS 730 – Prescriptive Modeling and Optimization for Business Analytics (2 credits)  GEN BUS 740 – Experiments and Causal Methods for Business Insights (2 credits)  GEN BUS 760 – Data Technology for Business Analytics (3 credits)  GEN BUS 770 – Analytics Consulting Practicum (4 credits)  GEN BUS 840 – Current Topics–Business Analytics (2 credits)  OTM 752 – Project Management (1 credit)  Elective Courses:  ACCT 603 – Financial Analysis  ACT SCI 654 – Regression and Time Series for Actuaries  ACT SCI 655 – Health Analytics  GEN BUS 704 – Data to Decisions  MHR 617 – People Analytics  MKT 815 – Marketing Analytics  OIM 714 – Supply Chain Analytics  RMI 655 – Risk Financing  RMI 660 – Risk Analytics and Behavioral Science | DS 700: Foundations of Data Science  DS 705: Statistical Methods  DS 710: Programming for Data Science  DS 715: Data Warehousing  DS 730: Big Data: High-Performance Computing  (Prerequisite: DS 710)  DS 735: Communicating About Data  DS 740: Data Mining & Machine Learning  (Prerequisites: DS 705, DS 710)  DS 745: Visualization and Unstructured Data Analysis  (Prerequisites: DS 700, DS 705, DS 710, DS 740)  DS 760: Ethics of Data Science  (Prerequisites: DS 700 or DS 780)  DS 775: Prescriptive Analytics  (Prerequisite: DS 705)  DS 780: Data Science and Strategic Decision-Making  DS 785: Capstone |