



GRADUATE CERTIFICATE IN BUSINESS ANALYTICS

The Graduate Certificate in Business Analytics (GCBA) at Bryant University is a four-course part-time program. Students complete three core courses (3 credits each) and a specialized capstone course (3 credits), providing them with understanding of key areas in applied analytics including data analytics methods and tools, data warehousing, data mining techniques, predictive analytics, big data, and visualization. Students completing the GCBA will be awarded a joint certificate from Bryant University and **SAS**® in data analytics.

By completion of these four courses, students will be awarded with a Joint Certificate in Business Analytics from **SAS** and Bryant University. Three of these courses also may be applied to a Business Analytics specialization in the MBA program.

STATISTICS PRIMER

Students who have not completed a university level statistics course and who have not had previous exposure to statistics or quantitative analysis may be required to complete an online, self-paced statistics primer course prior to starting the GCBA program.

SAS COMPONENT IN COURSES

Each of the required courses will contain sufficient **SAS**® programming material to qualify students for a Bryant/SAS certificate in analytics.

AA610 • ANALYTICS METHODS AND APPLICATION

This course serves as an introduction to the field of analytics. It covers the core concepts and applications of analytics in different areas. Students will be exposed to the concepts and tools of analytics, namely, data querying and reporting, data access and management, data cleansing, statistical programming, and statistical analysis of large datasets. Quantitative topics covered include descriptive statistics, regression analysis, forecasting, text mining, and data visualization and mining. Each of these statistical concepts will be applied to real world problems by utilizing case studies and appropriate data sets. We will not focus on formulas; instead we will use the statistical and data mining software packages **SAS Enterprise Guide** and Enterprise Miner for much of our analysis. We will also use **SAS**

Forecast Server and SAS Visualization Analytics where appropriate.

AA620 • DATA MINING AND PREDICTIVE ANALYTICS

This course will focus on applying data mining methodologies and predictive analytics tools to extract useful patterns from large bodies of data and on interpreting the results in order to take reasoned action to solve problems. Students will work with large data sets from organizations in several different domains and analyze the data using **SAS Enterprise Miner**. Topics covered include: multiple linear and logistic regression, decision trees, neural networks, cluster analysis, association analysis and text mining. Students will also be introduced to visualization techniques and applications.

AA630 • VISUALIZATION AND LARGE SCALE DATA ANALYSIS

This course is an introduction to the principles and techniques for data management and visualization. In this course, students will learn how data is stored, accessed, and eventually made into visualizations through analysis. Basic components of database systems, and how data is access using SQL will be discussed. The design considerations for more comprehensive data storage systems such as Data Warehouses and Hadoop will also be covered. Lastly, the course will discuss visual representation methods and techniques that increase the understanding of complex data. Emphasis will

be placed on the identification of patterns, trends and differences from data sets across categories, space, and time. Topics include multidimensional visualization, tree visualization, graph visualization, and time series data visualization techniques. Students will also be provided an overview of data warehouse design. In addition to Hadoop, **SAS Enterprise Miner** and **Visualization Analytics** will be used extensively.

AA651 • ANALYTICS CAPSTONE

The Analytics Capstone course provides students with the opportunity to apply the knowledge and skills that they have acquired during the GCBA to realistic problems that involve very large data sets ("Big Data"). In addition to using the techniques students have learned in the previous courses, students will be exposed to other important topics related to Big Data such as Hadoop, map-reduce, association rules, large scale supervised machine learning, streaming data, clustering algorithms, and NoSQL systems (Cassandra, Pig, Hive) as well as **SAS** software packages. The course will culminate with a final project based on a large data set. Students will present the results of their analysis and recommendations to other students in the class and/or to the organization that sponsored the project. Topics in project management will be presented during the course to help students organize their capstone project.



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**Statistics Primer
Online Mini Course**
Dependent on Background

APPLY TO MBA SPECIALIZATION IN BUSINESS ANALYTICS

AA610 Required
**Analytics Methods and
Applications**
Spring Semester

AA620 Required
**Data Mining and Predictive
Analytics**
Spring Semester

AA630 Required
**Visualization and Large Scale
Data Analysis**
Summer Semester

AA651 Required
Business Analytics Capstone
Summer Semester

