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PennState
World Campus

Graduate Programs
in Data Analytics

TABLE OF CONTENTS

Master of Professional Studies in Data Analytics	3	Tools and Platforms.....	5
Graduate Certificate in Business Analytics	3	Graduate Certificate in Business Analytics Curriculum	6
Master of Professional Studies in Data Analytics Curriculum	4	Begin Your Application Today	7



“We are in the era of big data, but it isn’t enough to merely store and organize these mountains of data; we need to be able to extract wisdom from it. That is the mission of the data analytics programs—the design, implementation, and use of data analytics systems to gain understanding, predict behavior, and make smarter decisions across a broad array of domains, including business, health care, manufacturing, education, and social media. These high-quality programs are delivered by outstanding faculty with genuine experience and expertise in leveraging data, and a proven track record of teaching in top-ranked online graduate programs.”

—Dr. Colin J. Neill
Director, Data Analytics Program



Master of Professional Studies in Data Analytics

Base Program and Business Analytics Option

The 30-credit Master of Professional Studies (MPS) in Data Analytics, offered online through Penn State World Campus, is designed for those interested in:

- database management
- data science
- business analytics
- database architecture
- web and marketing analytics
- business intelligence
- data engineering

The volume of data available in every sector of our economy creates opportunities for forecasting, prediction, modeling, simulation, and data-driven decision making. As a student in these programs, you can learn how to leverage this opportunity to make strategic business decisions for your organization.

The comprehensive master's degree curriculum is composed of a base program in Data Analytics and a specialized option in Business Analytics. The option allows you to tailor your studies to a particular area to complement your professional experience and existing skill set. The data analytics courses are taught by a multidisciplinary team of faculty representing a broad spectrum of industry experience.

Graduate Certificate in Business Analytics

In the 9-credit online Graduate Certificate in Business Analytics program you can learn how to leverage data to make strategic business decisions for your organization. As the data from transactions, social interactions, and sensors increase, opportunities emerge from careful analysis and modeling. Professionals who can transform data into sound business decisions are found in all aspects of business and society, including government, health care, information systems design and implementation, investments and banking, manufacturing, and dozens of other industries.

Master of Professional Studies in Data Analytics Curriculum

The 30-credit MPS in Data Analytics is made up of 9 credits of core curriculum, 9 credits specific to the base program, and 9 credits of electives. The course work culminates with a capstone project. Each course is 3 credits.

The Business Analytics option is structured the same as the base program but with 9 credits specific to the option.

Core Curriculum (9 credits)

Foundations of Predictive Analytics

Data Mining

Applied Statistics

Base Program Curriculum (9 credits)

Database Design Concepts

Large-Scale Database and Warehouse

Data-Driven Decision Making

or

Business Analytics Option Curriculum (9 credits)

Business Strategies for Data Analytics

Marketing Analytics

Prescriptive Analytics for Business

Electives (choose 9 credits)

Data Collection and Cleaning

Data Visualization

Enterprise Analytics Strategies

Applied Data Mining

Statistical Analysis System Programming

Regression Methods

Analysis of Variance and Design of Experiments

Genetic Algorithms

Technical Project Management

Decision and Risk Analysis in Engineering

Base Capstone Experience (3 credits)

Design and Implementation of Analytics Systems

or

Business Analytics Option Capstone Experience (3 credits)

Implementing Analytics for Business

For detailed curriculum information about the Data Analytics base program or the Business Analytics option, visit:

worldcampus.psu.edu/base-analytics

worldcampus.psu.edu/business-analytics

Tools and Platforms

Data Analytics students are exposed to a broad array of contemporary tools and platforms, including:

Database Framework

Object-relational RDBMS

- Oracle—marketing leading RDBMS
- PostgreSQL—open source RDBMS

Distributed storage solutions

- Apache Hadoop ecosystem
- Apache Cassandra distributed database

NoSQL databases

- MongoDB document-oriented database

Programming Languages and Platforms

Python—popular language for data analysis

Java—dominant object-oriented programming language

Docker—software container platform for easy application deployment

Statistical and Data Mining Packages

R—open source statistical computing environment

SPSS—IBM’s popular statistical analysis tools

SAS—analytics and business intelligence suite

Rattle—data mining GUI for R

Visualization Tools

Tableau—interactive data visualization package

QlikView—business intelligence visualization toolset

Gephi—open source network visualization platform

Machine Learning Tool Sets

KNIME—open source data analytics, reporting, and integration platform

Weka—open source knowledge analysis software

“Penn State’s Business Analytics Graduate Certificate and optional Master’s in Data Analytics, delivered through Penn State World Campus, provide the perfect road map for new, passionate data scientists to follow. The application of business intelligence software, big data tools, and an analytical mind in today’s business landscape empowers us to bring knowledge, advice, and clarity in an otherwise noisy and confusing data environment.”

—Sean Shanor
Entrepreneur
Penn State World Campus Student
Graduate Certificate in Business Analytics

Graduate Certificate in Business Analytics Curriculum

More than just predictive analytics, the business analytics curriculum explores and analyzes large sets of data to support data-driven business decisions, utilizing the complete spectrum of analytics activities: descriptive, diagnostic, predictive, and prescriptive. In addition to learning how to use optimization and forecasting techniques, students can gain a practical skill set to perform tasks in business, marketing, supply chains, operations, forensics, and risk.

The Graduate Certificate in Business Analytics consists of three courses from the MPS in Data Analytics—Business Analytics option. Each course is offered in only one semester, and all students must begin in the fall semester. By taking the three courses in sequential order, beginning with Business Strategies for Data Analytics, you can complete the required course work to earn the certificate within a year.

To earn the graduate certificate, you must complete the following 3-credit courses:

Business Strategies for Data Analytics

Marketing Analytics

Prescriptive Analytics for Business

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Start with a Business Analytics Certificate and Step Up to the Master's Degree

The Graduate Certificate in Business Analytics consists of three courses from the MPS in Data Analytics—Business Analytics option. You can begin by pursuing the certificate and then choose to continue and apply to the master's degree program. If you are accepted to the master's degree program, the 9 credits from the certificate may be applied toward the degree.

worldcampus.psu.edu/business-analytics

Begin Your Application Today

How to Begin

Admissions decisions for the data analytics programs are based on the quality of your complete application portfolio.

Application Materials

Graduate Certificate and Master's Degree

- completed graduate school application
 - statement of purpose
 - two professional or academic references for the certificate program; one professional or academic reference for the master's
 - official transcripts from all institutions attended
- undergraduate GPA and test scores
 - TOEFL or IELTS score, if applicable
 - résumé
 - official GMAT or GRE score (encouraged but not required for the graduate certificate)

For more information about these application materials, visit the How to Apply page of your program of interest:

worldcampus.psu.edu/base-analytics

worldcampus.psu.edu/business-analytics

worldcampus.psu.edu/bacert

Did You Know?

The Penn State World Campus MPS in Data Analytics is a collaboration of these three Penn State departments and colleges:

- Engineering Division of the School of Graduate Professional Studies, Penn State Great Valley
- Department of Statistics, Eberly College of Science
- Departments of Marketing and Supply Chain and Information Systems, Smeal College of Business

For More Information

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814-865-5403 (local and international)

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Admissions Counseling Hours

8:00 a.m.–8:00 p.m. ET Monday–Thursday

8:00 a.m.–5:00 p.m. ET Friday

Closed Saturday and Sunday

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