BUSINESS DATA ANALYTICS

Program Overview

Due to technological advancements and exponential growth in data, businesses are increasingly relying on the use of analytics and artificial intelligence to create new opportunities, address business challenges and outperform their peers. Companies such as OpenAI (Microsoft), Tesla, Google (Alphabet), Facebook (Meta), Amazon, Netflix, and Spotify rise above their competition through continual innovations fueled by artificial intelligence and driven by actionable business insights uncovered from analyzing their data. With the increasing demand for professionals who are capable of sifting through zettabytes of data to uncover insights and find business value, there is a shortage of talent in the analytics space.

Student Learning Outcomes

A business analytics graduate will demonstrate the ability to:

- formulate a business problem through developing a hypothesis;

- apply various descriptive, predictive, and prescriptive analytics techniques;

- implement all steps in the business analytics (BA) process (e.g., CRISP-DM);

- convey the results of analytics through visualization, oral, and written communication;

- apply information technology knowledge and domain-specific business knowledge to solve a business analytics problem (e.g. Marketing);

- apply ethical, socially responsible, and global perspectives in business analytics projects and/or processes.

Curriculum Overview

The structure of the program consists of six required courses and two elective courses. The six required courses provide core data analytics skills that are ubiquitously applicable for all analytics professionals. The two electives provide various track options that allow students to customize their program of study based on their choice of career path and interest in a specific industry or a business functional area.

Another key feature of the program is its emphasis on experiential learning through course projects embedded in multiple required courses plus a practicum/capstone course that gives students the opportunity to apply their analytical skills to solve a real business problem and to communicate their findings to real-world clients.

Degree Offered

- B.S.B.A. in Business Analytics
- Minor in Business Analytics

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Business Data Analytics Major Requirements

(24 credits)

Code	Title	Credits
Complete the following required courses:		
BDA 205	Introduction to Visual Data Analytics	3
BDA 355	Business Analytics with Python	3
BDA 398	Business Data Analytics Practicum	3
CIS 330	Database Systems	3
CIS 350	Practical Business Analytics with Excel and R	3
CIS 360	Data Mining	3
Select two courses from one of the following tracks:		**6**
Accounting Track		
ACC 302	Cost Management	
ACC 320	Accounting Info Systems	
Marketing Track		
MKT 366	Marketing Research	
MKT 367	Marketing Web Analytics	
Finance Track		
FIN 312	Investments	
FIN 315	Financial Modeling	
FIN 360	Fixed Income and Derivatives	
Risk Management Track		
MSD 260	Principles of Risk Management	
MSD 361	Risk Assessment and Analysis	
CIS 377	Risk Management and Compliance for Information Security	
Artificial Intelligence and Machine Learning Track		
CIS 401	Artificial Intelligence for Business	
MSD 330	Predictive Modeling and Applications	
Global Supply Chain Management Track		
GSC 115	Introduction to Global Supply Chain Mgt.	
GSC 235	Supply Chain External Focus: Customer and Supplier Logistics	
GSC 355	Supply Chain Internal Focus: Firm Operations	
Health Care Management Track		
ECO 450	Seminar in Economic Research	
HTH 215	Population Health Care Management	
Sport Analytics Track		
SPT 250	Introduction to the Business of Sports	
SPT 322	Sports Analytics	
Total Credits		**24**

Business Data Analytics Minor Requirements

(15 credits)

The Minor in Business Analytics is open to all Rider students.

Code	Title	Credits
Prerequisite Courses		
CIS 185	Information Systems Essentials [1]	3

Course	Title	Credits
MSD 205	Business Statistics [2]	3
Required Courses		**9**
CIS 330	Database Systems	
CIS 350	Practical Business Analytics with Excel and R	
CIS 360	Data Mining	
Select two of the following:		**6**
ACC 320	Accounting Info Systems	
BDA 205	Introduction to Visual Data Analytics	
ECO 450	Seminar in Economic Research	
BDA 355	Business Analytics with Python	
FIN 315	Financial Modeling	
HTH 215	Population Health Care Management	
MKT 366	Marketing Research	
MKT 367	Marketing Web Analytics	
MSD 330	Predictive Modeling and Applications	
Total Credits		**15**

[1] Business students pursuing the Business Analytics Minor are advised to take GSC 385 in lieu of CIS 385 for their business core.

[2] For non-business students, the following courses may be used as a substitute for MSD 205: BNS 250, MTH 120, ENV 200, PSY 105, PSY 201, or POL 230.

4 Year Academic Plan of Study

The following educational plan is provided as a sample only. Rider students who do not declare a major during their freshman year; who are in a Continuing Education Program; who change their major; or who transfer to Rider may follow a different plan to ensure a timely graduation. Each student, with guidance from their academic advisor, will develop a personalized educational plan.

Course	Title	Credits
Year 1		
Fall Semester		
CBA 110	Business in Action [1]	3
CIS 185	Information Systems Essentials [1]	3
CMP 120	Seminar in Writing and Rhetoric	3
MSD 105	Quantitative Methods for Business [2]	3
Liberal Arts Elective 1 [3]		3
	Semester Credit Hours	**15**
Spring Semester		
CMP 125	Seminar in Writing and Research	3
ECO 200	Principles of Macroeconomics	3
MKT 200	Marketing Principles	3
MSD 205	Business Statistics	3
Liberal Arts Elective 2 [3]		3
	Semester Credit Hours	**15**
Year 2		
Fall Semester		
ACC 210	Introduction to Accounting	3
BDA 201	Introduction to Business Analytics	3
COM 290	Professional/Strategic Speech	3
ECO 201	Principles of Microeconomics	3
MGT 201	Fund Management & Org Behavior	3
	Semester Credit Hours	**15**
Spring Semester		
ACC 220	Managerial Uses of Accounting	3
BDA 205	Introduction to Visual Data Analytics	3
CBA 212	Business Communications	3
CBA 236	Career Planning	3
CIS 350	Practical Business Analytics with Excel and R	3
	Semester Credit Hours	**15**
Year 3		
Fall Semester		
BUS 300	The Legal and Ethical Environment of Business	3
CIS 330	Database Systems	3
FIN 220	Introduction to Finance	3
International Business Elective [4]		3
Leadership Elective		3
	Semester Credit Hours	**15**
Spring Semester		
BDA 355	Business Analytics with Python	3
CIS 385 or GSC 385	Management Information Systems or Management Information Systems for Global Supply Chain Management	3
MSD 301	Operations Management	3
Liberal Arts Elective 3 [3]		3
Free Elective		3
	Semester Credit Hours	**15**
Year 4		
Fall Semester		
CIS 360	Data Mining	3
Major Elective		3
Liberal Arts Elective 4 [3]		3
International Business Elective		3
Free Elective		3
	Semester Credit Hours	**15**
Spring Semester		
BDA 398	Business Data Analytics Practicum	3
BUS 400	Strategic Management and Policy	3
Major Elective		3
Free Elective		3
Free Elective		3
	Semester Credit Hours	**15**
	Total Credit Hours for Graduation	**120**

[1] CIS 185 and CBA 110 may be taken in the Fall or Spring of Year 1.

[2] Students may be required to take MSD 104 based on placement. MSD 104 counts as a 3-credit Free Elective.

[3] Students must take four liberal arts electives; 3 credits must be in Natural Science, 3 credits must be in Social Science, 3 credits must be in Humanities, and 3 credits can be any course offered by the College of Arts and Sciences.

[4] Students are required to complete 6 credits of International Business Electives which can be fulfilled as major courses or free electives.

3 Year Academic Plan of Study

The following educational plan is provided as a sample only. Rider students who do not declare a major during their freshman year; who are in a Continuing Education Program; who change their major; or who transfer to Rider may follow a different plan to ensure a timely graduation. Each student, with guidance from their academic advisor, will develop a personalized educational plan.

Course	Title	Credits
Year 1		
Fall Semester		
CBA 110	Business in Action	3
CIS 185	Information Systems Essentials	3
CMP 120	Seminar in Writing and Rhetoric	3
ECO 200	Principles of Macroeconomics	3
MSD 105	Quantitative Methods for Business	3
	Semester Credit Hours	**15**
JTerm		
Liberal Arts Elective 1 [1]		3
	Semester Credit Hours	**3**
Spring Semester		
CMP 125	Seminar in Writing and Research	3
ECO 201	Principles of Microeconomics	3
MKT 200	Marketing Principles	3
MSD 205	Business Statistics	3
Liberal Arts Elective 2 [1]		3
	Semester Credit Hours	**15**
Summer Semester		
ACC 210	Introduction to Accounting	3
Liberal Arts Elective 3 [1]		3
	Semester Credit Hours	**6**
Year 2		
Fall Semester		
BDA 201	Introduction to Business Analytics	3
CBA 236	Career Planning	3
COM 290	Professional/Strategic Speech	3
FIN 220	Introduction to Finance	3
MGT 201	Fund Management & Org Behavior	3
Free Elective		3
	Semester Credit Hours	**18**
JTerm		
Free Elective		3
	Semester Credit Hours	**3**
Spring Semester		
ACC 220	Managerial Uses of Accounting	3
BDA 205	Introduction to Visual Data Analytics	3
CBA 212	Business Communications	3
CIS 350	Practical Business Analytics with Excel and R	3
International Business Elective [2]		3
Leadership Elective [3]		3
	Semester Credit Hours	**18**
Summer Semester		
MSD 301	Operations Management	3
Free Elective		3
	Semester Credit Hours	**6**
Year 3		
Fall Semester		
BUS 300	The Legal and Ethical Environment of Business	3
BDA 355	Business Analytics with Python	3
CIS 330	Database Systems	3
CIS 385 or GSC 385	Management Information Systems or Management Information Systems for Global Supply Chain Management	3
Liberal Arts Elective 4 [1]		3
Major Elective		3
	Semester Credit Hours	**18**
JTerm		
Free Elective		3
	Semester Credit Hours	**3**
Spring Semester		
BDA 398	Business Data Analytics Practicum	3
BUS 400	Strategic Management and Policy	3
CIS 360	Data Mining	3
Major Elective		3
International Business Elective [2]		3
	Semester Credit Hours	**15**
	Total Credit Hours for Graduation	**120**

[1] Students must take four liberal arts electives; 3 credits must be in Natural Science, 3 credits must be in Social Science, 3 credits must be in Humanities, and 3 credits can be any course offered by the College of Arts and Sciences.

[2] Students are required to take six credits of International Business Electives.

[3] Select from LDP 200, LDP 220, LDP 398, MGT 355, or MGT 363.

Notes:

- The above plan assumes no AP or other credits transferred into Rider University.
- Business Honors students may have a different course sequence.
- Students may be required to take MSD 104 Intro to Quantitative Methods based on placement. MSD 104 counts as a 3-credit Free Elective.

Courses and Descriptions

BDA 201 Introduction to Business Analytics 3 Credits
This course introduces students to the process of analyzing big data and discovering new information to support business decision making. The course covers descriptive, predictive, and prescriptive analytics. Some topics covered include data visualization, data forecasting, and data mining. This course provides students with the fundamental concepts and tools needed to understand the role of business analytics in organizations and shows students how to apply basic business analytics tools in a spreadsheet environment. It also includes how to communicate with analytics professionals to effectively use and interpret analytic models and results for making better business decisions. Emphasis is given on applications, concepts and interpretation of results. Students utilize Excel for data analysis.
Prerequisite(s): MSD 200 with a minimum grade of D or MSD 205 with a minimum grade of D.

BDA 205 Introduction to Visual Data Analytics 3 Credits
This course will equip the students with the fundamental skills to perform visual data analytics. Students will learn how to prepare a dataset for visual analysis, create basic and advanced visualizations using Tableau, and "tell a story" using data visualization. At the completion of the course, students will be able to apply best visualization practices and create effective visualizations to convey analytical insights to a business audience.
Prerequisite(s): CIS 185 and BDA 201.

BDA 355 Business Analytics with Python 3 Credits
Python has become essential for data analysis in recent years. Research shows that Python is the most popular and growing programming language for business analytics mainly because it is flexible, easy to learn, easily accessible due to its open-source nature, and well supported by plenty of useful analytics libraries since it is heavily used in industry and academy. This course provides students with the required knowledge of working with popular Python data analytics libraries such as Pandas, NumPy, Matplotlib, SciPy, and Scikit-Learn as well as basic programming with Python such as Python syntax, data structure, conditional statements, and functions. Some topics covered include data retrieval and manipulation with Pandas (Python's most popular library for data analytics) and SQL, data visualization with Matplotlib, statistical distributions with NumPy, hypothesis testing with SciPy, and multiple regression with Scikit-Learn.
Prerequisite(s): BDA 201.

BDA 398 Business Data Analytics Practicum 3 Credits
This course develops and sharpens the skills needed for a successful career in analytical business consulting, such as analysis, critical thinking, presentation, problem solving, and teamwork. This class will develop skills in each of these areas through discussion of the principles underlying best practices and feedback in a series of applied exercises and cases that will prepare students to obtain and succeed in analytical business consulting problems. The students will analyze the data provided by professionals from experts in the field, and they will present the project at the end of the semester.
Prerequisite(s): BDA 205 and BDA 201; Junior or Senior Standing; Completion of 12 credit hours in business analytics coursework or Permission of Instructor.

BDA 399 The Co-Operative Experience 6 Credits
This Co-Operative Experience will provide Business Analytics majors with supervised employment (approximately four months), where the students will have an opportunity to apply what they have learned in their business analytics and other business classes.
Prerequisite(s): Business Analytics major, Junior or Senior standing, GPA of 3.0 or above.

BDA 490 Independent Research and Study 3-4 Credits
Topic to be approved by professor and department chairperson. Available to juniors and seniors.

BDA 491 Business Data Analytics Internship 3 Credits
This Internship course will provide Business Analytics majors students with supervised employment (approximately two months), where the students will have an opportunity to apply what they have learned in their business analytics and other business classes.
Prerequisite(s): Business Analytics major, Junior or Senior standing, GPA of 2.75 or above.

CIS 330 Database Systems 3 Credits
This course involves the study of computer databases. Major topics include relational databases, use of the structured query language (SQL) to query relational databases, and design and maintenance of relational databases.
Prerequisite(s): CIS 185.

CIS 350 Practical Business Analytics with Excel and R 3 Credits
This is a required course for the Business Analytics major/minor. This course will provide the student with an opportunity to gain proficiency in analyzing and visualizing data using both Excel and R. The learning experience includes not only classic data tools, such as PivotTables, VLOOKUP, and data visualization, but also more advanced data tools such as descriptive statistics, inferential statistics, predictive analytics using R, and optimization using Excel Solver.
Prerequisite(s): BDA 201.

CIS 360 Data Mining 3 Credits
This course deals with modern technologies for data analysis. Hands-on exercises for data retrieval, data visualization and predictive analytics will be carried out using up-to-date methodologies and software tools. The full data mining life cycle will be covered from recognizing business problems and opportunities amenable to data mining analysis through deploying and monitoring solutions.
Prerequisite(s): CIS 185 with a minimum grade of D .