



**Data Analysis for Managerial Decision-Making**

**Dr. Amath SARR, DBA, MBA, PSM II, PSM I**

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| **Instructor’s Contact Information:**  Office:  Office Hours:    Email: [asarr@monroeu.edu](mailto:asarr@monroeu.edu) | **Course Information:**  Days:  Time:  Location: Hybrid Class |

# **Course Description**

In today's data-driven business environment, professionals with strong quantitative skills are highly sought after, especially in fields like marketing, operations, and finance. In this course, students will explore the exciting world of data analysis and how it relates to various careers and business solutions. Students will be equipped with analytical tools and methodologies to solve business problems using data, statistics, and mathematical concepts, focusing on decision-making and strategic insights. The emphasis on quantitative analysis is designed to provide students with the skills to analyze data, identify trends, solve business problems, and make informed decisions using various statistical methods, models, and business intelligence tools. Python, a programming language that business professionals are increasingly utilizing for data manipulation, analysis, and visualization is also introduced in this course. In addition, students focus on the practical application of these concepts in everyday life to make well-informed business decisions, understand data, and critically evaluate information. Students create visualizations to effectively communicate complex information in a clear and concise manner, facilitating better understanding and collaboration. Also, a final project that incorporates all of the skills and concepts learned in this course, which includes the ethical implications of data collection, use, and sharing is required.

**Course Learning Objectives**

Upon successful completion of this course, students should be able to:

* Demonstrate basic proficiency in Python programming for data manipulation and analysis
* Utilize data analysis tools and techniques to extract insights from data to support business decisions.
* Analyze data, identify patterns, and make informed decisions in various contexts.
* **Demonstrate use of** critical thinking skills to evaluate information and communicate findings effectively
* Evaluate information and making reasoned judgments based on quantitative data.
* Apply statistical concepts, data analysis techniques, and probability, mathematical models to solve real-world business problems and make predictions
* Gather, clean, and analyze data using tools like [Excel](https://www.google.com/search?sca_esv=ac0f266065677769&rlz=1C1GCEA_enUS1143US1143&cs=0&q=Excel&sa=X&ved=2ahUKEwjGq6S9_c6MAxXeNlkFHXoaN0UQxccNegQIBBAB&mstk=AUtExfCgLQlaiCV-ZjQI7Ss3GMAzFacERvJiqVOibnAd7wncowaJ0fyzj-7ry1gyqpfXjUhWyqQGW_Di1hsmhNvllTJP0Il2yWD-KFSr60L1udnXc1EHKE29xjyxE-Otf3IpRHA&csui=3), [SQL](https://www.google.com/search?sca_esv=ac0f266065677769&rlz=1C1GCEA_enUS1143US1143&cs=0&q=SQL&sa=X&ved=2ahUKEwjGq6S9_c6MAxXeNlkFHXoaN0UQxccNegQIBBAC&mstk=AUtExfCgLQlaiCV-ZjQI7Ss3GMAzFacERvJiqVOibnAd7wncowaJ0fyzj-7ry1gyqpfXjUhWyqQGW_Di1hsmhNvllTJP0Il2yWD-KFSr60L1udnXc1EHKE29xjyxE-Otf3IpRHA&csui=3), PowerBI, and [Tableau](https://www.google.com/search?sca_esv=ac0f266065677769&rlz=1C1GCEA_enUS1143US1143&cs=0&q=Tableau&sa=X&ved=2ahUKEwjGq6S9_c6MAxXeNlkFHXoaN0UQxccNegQIBBAD&mstk=AUtExfCgLQlaiCV-ZjQI7Ss3GMAzFacERvJiqVOibnAd7wncowaJ0fyzj-7ry1gyqpfXjUhWyqQGW_Di1hsmhNvllTJP0Il2yWD-KFSr60L1udnXc1EHKE29xjyxE-Otf3IpRHA&csui=3), and to present their findings visually in written reports, presentations, and dashboards.
* Apply methods for extracting knowledge and insights from large datasets and create visual representations using data visualization tools to identify patterns, trends, outliers, and other insights for use in business decision-making

**Prerequisites:** KG 578 Business Analytics Foundations

**Credits: 3**

# **Course Materials**

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| **The Textbook for this course is provided to you electronically in Blackboard** | |
| **Required Text(s):** | Business Analytics: Data Analysis and Decision Making |
| **Author(s):** | S. Christian Albright, Wayne L. Winston |
| **Edition:** | 8th |
| **Year:** | 2024 |
| **Publisher:** | Cengage |

Be sure to check with your professor for any additional requirements or key codes needed for your course

**Required Technology**:

All Students in online business classes are required to have a webcam, microphone and Microsoft Office 2021 (Word, Excel, PowerPoint, and Access). A copy of MS Office 2021 can be obtained from ‘My Monroe’ by logging in with your Monroe credentials and selecting eAcademy Webstore from the Single Sign-On screen.

**Monroe University Attendance Policy for Graduate Classes**

**Attendance Policy**

The University’s educational approach is personal and hands-on. Interaction among students and faculty supports the development of knowledge and skills for academic success and professional development. Therefore, consistent attendance, punctuality, and active participation are highly valued. The practices and guidelines outlined in this policy intend to support those values.  

**Documented Absences**     
The University understands that situations arise that may interfere with attendance and are beyond the control of the student. These include, but are not limited to, medical emergencies for the student or members of their family, an important legal obligation, military deployment, job-related obligations, or the unfortunate passing of a loved one. In such cases, a student may provide timely documentation for the related absence to Academic Affairs, which will review the circumstances and record the absence as “documented” when warranted (denoted on the student’s attendance record with a “D”). The student will then be permitted and encouraged to make up any missed exams or assignments.

Note: All documents are subject to verification. Submitting falsified documents is a serious violation of the Code of Academic and Scholarly Integrity, resulting in sanctions up to and including expulsion from the University. Students should send any questions and/or appropriate documentation to:

* King Graduate School: *Jerry Kostroff* at [jkostroff@monroeu.edu](mailto:jkostroff@monroecollege.edu)
* Bronx Campus: *Jerry Kostroff* at [jkostroff@monroeu.edu](mailto:jkostroff@monroecollege.edu)
* New Rochelle Campus: *Jacinth Coultman* at [jcoultman@monroeu.edu](mailto:jcoultman@monroecollege.edu)
* St. Lucia Campus: *Sonia Alexander* at [salexander@monroeu.edu](mailto:salexander@monroecollege.edu)
* Online: *Jacinth Coultman* at [jcoultman@monroeu.edu](mailto:jcoultman@monroecollege.edu)

**Sanctioned Absences**    
A student may miss a class because they are representing the University or School at a conference, an academic or athletic competition, or a co-curricular event. These valuable experiences enhance student learning and achievement. In such cases, Academic Affairs records the absence as “sanctioned” (denoted on the student’s attendance record with an “S”). The student will be permitted and encouraged to make up any missed exams or assignments.

**King Graduate School Absence Guidelines**    
Students are expected to attend all class sessions and be on time.

*At the discretion of the professor, students who exceed the above number of absences may have up to 10 points deducted from their overall course grade.*

**Attendance and Participation in the Virtual Classroom**

Virtual classes require active participation from all students to be truly effective. Students should treat virtual classes exactly like in-person classes, meaning they need to be on time and fully present for the entirety of the class period. Work schedules and personal appointments should not conflict with class times – it is the student’s responsibility to make sure they are fully available for their virtual classes, just as they would be for an in-person class. Active participation includes but is not limited to the following: responding to the professor, engaging in discussion and chats, and completing in-class assignments and presentations.  

**Lateness/Leaving Class Early**   
Students who arrive to class 10 minutes after the start time are recorded as late and those who leave before the class is dismissed are recorded as having left early. At the discretion of the professor, a certain combination of lateness or early departures may be counted as an absence. The professor’s policy is stated in the course syllabus.  

NOTE: Clinical and lab courses have more stringent attendance and punctuality policies that are included in the course syllabus.

**Accommodative Services**

Monroe University is accessible to students with disabilities and admits those students whose credentials demonstrate they have the motivation and capabilities to successfully pursue

their academic goals at the University. All students with disabilities have access to a Coordinator of Services for Students with Disabilities:

* Saadia Del-Llanoat[sdelllano@monroeu.edu](mailto:sdelllano@monroecollege.edu)

**Health and Wellness**

The University's health and wellness philosophy is to provide a holistic, student-centered environment that allows students to explore who they are while helping to support goals of mental, physical, and emotional wellbeing, and supporting students to achieve academic success.  Services include clinical counseling services, fitness centers, nutrition services, and educational programming.

**Counseling Services**

Currently, the University has clinicians providing virtual and onsite counseling. One-on-one and group counseling sessions are available. To request a counseling appointment call (646) 413-3539 or access the online form here:  [Counseling Appointment Request](https://studentsuccess.monroeu.edu/register/collegeidvalidation?applicationtype=2).

* Jessica Pollas, LMSW, LCSW, Director of Clinical Services at [jpollas@monroeu.edu](mailto:jpollas@monroecollege.edu)

**KGS Academic Center and Graduate Research Center**

Students may avail themselves of academic support, tutoring, writing and research assistance, and library services.

## **Course Assessment**

Student learning will be assessed using a variety of measures such as quizzes, exams, assignments, projects, presentations, and/or essays, etc.

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| **ACTIVITIES** | **% of GradE** |
| Weekly Discussions | 20 % |
| Exams | 30 % |
| Final Project | 20 % |
| Final Exam | 30 % |
| **TOTAL** | **100 %** |

**Graduate Grading Scale**

Student’s final grade will be the result of the weighted average of the grading elements depicted in the table below:

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| --- | --- |
| **Letter Grade** | **Numeric Grade** |
| A | 90-100 |
| B+ | 85-89 |
| B | 80-84 |
| C+ | 75-79 |
| C | 70-74 |
| F | **Less than 70** |

**Final Grades**

Faculty submit final grades by the Saturday following the conclusion of the final exam period. Once the grade auditing process is complete, final grades are available for students to view on the following Wednesday.

**Grade Appeal Process**

The grade appeal process provides a student with an opportunity to question or dispute a final course grade. The student should first discuss the matter with the professor, who determines if a grade change is warranted. If the matter is not resolved, the student may file a grade appeal with their School Dean or department head.  The grade appeal period commences upon publication of semester final grades and concludes on the designated date at the beginning of the following semester. The dates are published in the academic calendar, and the full policy can be found in the [University Catalog](https://catalognext.monroecollege.edu/catalog/academic-policies/undergraduate-academic-policies/#text) on the University’s website.

**Statement on Academic Rigor**

A rigorous education is characterized by faculty, curricula, and meaningful learning experiences that challenge students to engage in higher-order thinking and to apply concepts and skills across multiple contexts. Students emerge from such an experience with the ability to writeproficiently, communicate effectively, and work collaboratively and creatively toward solutions and innovations. Monroe University affirms its commitment to the personal growth of its students by providing a learning environment built on high academic standards that has the appropriate level of intellectual challenge and academic support.

***Faculty Statement on Academic Rigor***

Monroe University faculty and administration embrace a culture of caring, and strive to provide students a clear understanding of standards and expectations while offering students appropriate academic support to ensure that students fulfill their learning potential. Faculty are committed to creating a teaching environment that engages and challenges students to learn progressively towards higher levels of achievement.

***Student Statement on Academic Rigor***

Monroe University students take responsibility for their academic journey and ownership of their education by challenging themselves to learn, grow, and think critically. As students progress in their programs, they should apply knowledge and skills learned to higher-level courses, experiential learning opportunities, and ultimately to a career in their field.

**Code of Academic and Scholarly Integrity**

Monroe University is an academic community. Its fundamental purpose is the pursuit of knowledge in preparation for a career and for life. Essential to the success of this educational mission is a commitment to the principles of academic integrity. Every member of the University community (whether Onsite, Virtual, or Online) is responsible for upholding the highest standards of honesty at all times. The use of integrity software (such as plagiarism checkers, lockdown programs, etc.) helps to ensure this adherence. With this in mind, students should be aware that all papers will be scanned and tests monitored, and they may be required to download applicable software. As members of the University community, all students are responsible for adhering to the principles and spirit of the following Code of Academic and Scholarly Integrity.

Activities that have the effect or intention of interfering with education, pursuit of knowledge, or fair evaluation of a student’s performance are prohibited. Examples of such activities include, but are not limited to, the following definitions:  

**A. Cheating:** Using or attempting to use unauthorized assistance, material, or study aids in examinations or other academic work or preventing, or attempting to prevent, another from using authorized assistance, material, or study aids. Examples: using AI bots (e.g., ChatGPT, Google Bard, Bing AI, etc.) without permission; using a cheat sheet in a quiz or exam, altering a graded exam and resubmitting it for a better grade, using an electronic device to obtain assistance during an examination, etc.  

**B. Plagiarism:** Using the ideas, data, or language of another without specific or proper acknowledgment. Examples: copying another person’s paper, article, or work and submitting it for an assignment; using someone else’s ideas without attribution; using AI generated text as your own (e.g., ChatGPT, Google Bard, Bing AI, etc.); failing to use quotation marks where appropriate; etc.

**C. Fabrication:** Submitting contrived or altered information in any academic exercise. Examples: making up data for an experiment; falsifying data; citing nonexistent articles; contriving sources; submitting falsified paperwork to document attendance; submitting falsified or forged timesheets for internships or work study positions; etc.     

**D. Multiple Submissions:** Submitting, without prior permission, any work submitted to fulfill another academic requirement at Monroe or any other institution. Example: submitting a paper written for one class to another class without first getting permission from both professors. 

**E. Misrepresentation of academic records:** Misrepresenting or tampering with or attempting to tamper with any portion of a student’s transcript or academic record, either before or after coming to Monroe University. Examples: forging a transcript or diploma; falsifying academic information (e.g., on one’s resume, LinkedIn profile, etc.); tampering with computer records; etc.  

**F. Facilitating academic dishonesty:** Knowingly helping or attempting to help another violate any provision of the Code. Example: working together on a take-home exam without prior permission from the instructor, etc.   

**G. Unfair advantage:** Attempting to gain unauthorized advantage over fellow students in an academic exercise. Example: gaining or providing unauthorized access to examination materials, obstructing or interfering with another student’s efforts in an academic exercise, lying about a need for an extension for an exam or paper, continuing to write even when time is up during an exam, destroying or keeping library materials for one’s own use, etc.   

Penalties:  Students who violate the Code of Academic and Scholarly Integrity may be subject to a grade of “F” for the work submitted, an “F” in the course, written reprimands in the student’s academic file, probation, suspension, or dismissal from the University. Professors who encounter a breach of the Code are required to report it to the Dean of their department. The student in question must then meet with a dean to discuss the infraction and its consequences. Note that ignoring or skipping this meeting will not make the problem go away – doing so will only intensify the penalty.

Students are expected to be fully aware of the University’s requirements and expectations regarding academic honesty and scholarly integrity. If a student is unsure whether their action(s) constitute a violation of the Code of Academic and Scholarly Integrity, then it is that student’s responsibility to consult with the instructor to clarify any ambiguities.

**Student Evaluations of Course and Instructor**

Monroe University students have an important voice in the academic community and an obligation to give an honest assessment of their instruction and coursework. As an expectation of every course, students will complete an anonymous, online course evaluation questionnaire. By doing so, students provide information used to enhance the relevance of the course content and effectiveness of the instruction you experienced. The course evaluation period will be announced by the Academic Office during the course of the semester.

**School Specific Policies**

# **Faculty Specific Policies**

Late Assignments will be subject to 5 point **PER DAY** penalty…**NO ASSIGNMENT WILL BE ACCEPTED THAT IS MORE THAN TWO WEEKS LATE**

Items you should note:

* Homework is expected to be turned in on the assigned due date…iIf you have a ***legitimate*** reason for not completing your homework on time, you must let me know at least one class a head…
* Homework that is turned in late will be graded as such; that is, **5 points per calendar day will be deducted**…so for example, homework that was due on a Wednesday that is turned in on Monday is considered 6 days late and 30 points will automatically be deducted…
* No assignment will be accepted that is more than two weeks after its due date…
* Everything you do counts…the lowest grade will **NOT** be dropped…
* Everyone is expected to take the final exam…**NO** exemptions will be given…
* Papers must be computer generated, proof-read and submitted in the appropriate style and format (APA)…always cite sources used for your papers…
* Students who engage in plagiarism will receive an “F” for the course and their name submitted to Academic Affairs…
* Students are expected to attend all classes…students who do not attend all classes are subject to having their final grade reduced…

Below are two of my favorite quotes. Read them…understand them…use them…

* “*Whether you think you can or think you can’t, you are always right!*” – Henry Ford
* “*A Hall of Famer realizes that the crime is not being knocked down; the crime is not getting up again!*” – Lawrence Taylor

I like these two quotes as I believe they reflect the manner in which we should approach our studies (and careers)…the goal is NOT to get good grades – the goal is to ***LEARN***…in all my years of interviewing hundreds of people, I have never once asked someone what grade they received in a class…I have, however, asked them about what they learned or got out of a class.

Focus on learning – the grades will come!…

**Weekly Topics Outline**

**NOTE: Topics/sequence may change due to instructor discretion or as circumstances require.**

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| Week | Topic | Description | Activities |
| Week 1 | Introduction to Data-Driven Decision-Making | Course overview; the role of data in business; introduction to tools and expectations. | Icebreaker; Tool walkthrough (Excel, SQL, Python); Case discussion |
| Week 2 | Data Structures and Business Data Sources | Overview of structured/unstructured data; databases, spreadsheets, and APIs. | Excel table formatting; SQL schema overview; data source mapping |
| Week 3 | Data Cleaning and Preparation | Techniques for data wrangling, missing values, and consistency checks. | Python pandas lab; Excel cleaning; SQL queries |
| Week 4 | Descriptive Analytics and Statistics | Central tendency, dispersion, frequency analysis using Excel and Python. | Excel Data Analysis ToolPak; histograms; summary statistics in Python |
| Week 5 | Data Visualization for Business Insights | Principles of effective visualization; intro to Tableau and Power BI. | Dashboard lab; storytelling with data; chart critique |
| Week 6 | Probability and Business Applications | Basics of probability; business risk; expected value; Python simulations. | Monte Carlo simulation; probability trees; Excel scenarios |
| Week 7 | Inferential Statistics and Decision-Making | Hypothesis testing, confidence intervals, and p-values in business context. | Python SciPy lab; t-tests; A/B testing activity |
| Week 8 | SQL for Business Analytics | Data extraction from relational databases using SQL commands. | Hands-on SQL lab; JOIN queries; filtering sales data |
| Week 9 | Regression and Predictive Modeling | Linear and multiple regression models; interpretation for decision-making. | scikit-learn regression; Excel modeling; model diagnostics |
| Week 10 | Forecasting with Time Series Data | Trends, seasonality, and forecasting techniques. | Moving averages; Python time series; Power BI projections |
| Week 11 | Dashboards and Executive Reporting | Building insightful dashboards; using BI tools to support real-time decisions. | Power BI advanced dashboards; stakeholder communication workshop |
| Week 12 | Ethical Data Use and Bias | Exploring the ethical implications of data collection and algorithms. | Case discussion; algorithm bias simulation; ethical guidelines checklist |
| Week 13 | Capstone Project Presentations | Student presentations applying all tools and techniques to solve a business problem. | Final presentations; peer reviews; reflective discussion |
| Week 14 | Final Project |  |  |
| Week 15 | Final Exam |  |  |