The University Of North Carolina at Greensboro
Joseph M. Bryan School of Business and Economics
The MBA Program

Course Number:	MBA 701-03
Course Title:	Quantitative Analysis for Decision Making
Semester:	Spring 2026
Instructor:	Dr. Vashkar Ghosh
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COURSE DESCRIPTION

The availability of large amounts of data to today's business organizations and the opportunity it offers for making better decisions that can improve both financial and operational performance means that data analytics will continue to play an increasingly important role in today's world. This course introduces students to a variety of quantitative methods and tools to analyze data from various business domains to improve fact-based decision making. Specific topics covered in the course include descriptive statistics and data visualization, hypothesis testing, confidence intervals, regression analysis, decision analysis, optimization modeling, and simulation.

COURSE OBJECTIVES

The course goals are to: (i) Demonstrate the wide range of situations in which quantitative analysis improves decision making and creates competitive advantages; (ii) Develop students' analytical thinking skills; (iii) Develop students' mastery of analysis using spreadsheet models. Upon completing the course, students should be able to:

- *Describe* a set of data using histograms, scatter diagrams and summary statistics.
- *Compute* statistics from sample data to support confidence interval estimation, hypothesis testing and regression analysis.
- *Infer* the statistical precision of insights derived from confidence interval estimation, hypothesis testing and regression analysis.
- *Construct* effective models for decision making situations using principles of professional spreadsheet design.
- *Compute* optimal solutions to decision making models for the management of a wide range of situations in which quantitative analysis improves decision making.
- *Analyze* spreadsheet simulation models and decisions with uncertain outcomes by using multiple criteria for optimality and risk.

PRE-REQUISITE COURSES AND REQUIREMENTS

- Pre-MBA workshop in statistics and spreadsheet skills or a spreadsheet-based undergraduate course in probability and statistics.
- Students must meet the passing grade in Excel 365 Prep Course.

COURSE TEXTBOOK AND OTHER MATERIALS

1. MindTap® Business Statistics, Instant Access for S. Christian Albright & Wayne L. Winston, *Business Analytics: Data Analysis and Decision Making*, 7th Edition. 2020.
    - MindTap® is an online learning resource that includes e-text, videos of worked examples, flashcards and many other study resources.
      MindTap® is required to complete graded problem sets and quiz assignments. Students may purchase access to MindTap® directly from Cengage, or a printed access card from the UNCG Bookstore.
    - Cengage also offers various product options that include combinations of e-text, print, and digital platform. Students can learn more about these options by visiting: https://www.cengage.com/c/business-analytics-data-analysis-decision-making-7e-albright/9780357109953PF/

    Accessing The Course Material Via First Day Complete
    - Electronic access to the course textbook is available through UNCG First Day Complete, a program managed by the UNCG Bookstore that provides digital course materials to students at a discount. You should have received an email from the bookstore confirming the materials provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pickup or home delivery). If you haven't done so already, please confirm your fulfillment preference so the bookstore can prepare your materials. For more information about your course pack, visit https://bookstore.uncg.edu/first-day/
    - This course is part of the UNCG First Day program where you will have access to the e-text and MindTap platform. The required materials for this course have been integrated and made available on Canvas. To access the e-text within Canvas, you will need to select the "Click Here to Access MindTap" navigation link.

2. Laptop installed with MS Excel 2010 or later and the following add-ins: Solver, Analysis Toolpak, SolverTable, Palisade Decision Tools Suite (Stat Tools, @Risk, PrecisionTree, NeuralTools, TopRank, and Evolver). Please note that the examples provided in the text are based on Excel 2016.
    - Some of the Excel features used in this course are not supported by Excel for Mac. As such, only PC Windows-based computers, or Mac Computers with Excel running on a Windows emulation program are appropriate for this course.

Mac users need to use a Windows emulation program (Bootcamp, Parallels, Vmware Fusion, etc.), along with Windows, to participate in the course!!

COURSE STRUCTURE

This course meets for one semester of instruction. The class will be taught in an online format and will make extensive use of the Canvas Learning Management System used by UNCG along with regular Microsoft Teams sessions. The lecture notes/slides and all announcements will be posted on Canvas.

Canvas

This course will use UNCG Canvas as the course management tool to post important information. This includes course syllabus, tests, grades, videos, reading materials, lecture notes/slides, announcements, and other instructional materials. It is the student's responsibility to check Canvas regularly for important announcements, such as class notes, emails, and grades among others. To access Canvas, visit: http://canvas.uncg.edu.

Microsoft Teams

Teams sessions will be used to present/ clarify course concepts and allow opportunity for discussion and dialogue between the professor and students. Participation either "in-person" or through "recordings" is strongly encouraged. Teams sessions will be recorded which will provide students with access who are unable to participate in the "live" sessions. A tentative schedule of the Teams sessions will be made available and posted on Canvas. Students are encouraged to contact the professor via email to set up meetings and additional sessions may be held as needed.

Discussion Forums

The purpose of the discussion board is to facilitate collaboration among students enrolled in the class. Please use the discussion board to communicate with your classmates and ask any general questions you may have about the class. Chances are that if you have a question, someone else has the same one and I shall also be participating in these discussions as and when necessary.

Excel 365 Prep Course

This course relies on Microsoft Excel and some of its powerful add-ins to implement the data analysis techniques that will be covered in class. It is important for students to note that although Microsoft Excel will be used extensively throughout the course, the course is not designed to teach students how to use Excel. Rather, the course focuses on how to address business problems using various quantitative methods. Excel only serves as a tool to implement these data analysis methods. As such, students are expected to have a working knowledge of Microsoft Excel prior to the start of the class. The Excel 365 Prep course provided through the MBA office will help students assess their level of Excel proficiency. Students must achieve a score of **80%** on the assigned proficiency quizzes in order to earn course credit for the Excel 365 Prep Course. Students may attempt the Excel 365 Prep Quizzes as many times as needed before the due date posted on Canvas.

MindTap
Problem-Sets and Quizzes will be administered via MindTap, the online software accompanying the text. **Students are therefore required to purchase access to MindTap**. To access or register for MindTap, please see the link and video guide provided on Canvas.

Quizzes
There will be a quiz at the end of every module/topic area to test participants' understanding of the concepts discussed in class. The objective of the quizzes is to reinforce key concepts discussed in class. The quizzes will be short and relatively simple. All quizzes will be administered via MindTap or Canvas. **All quizzes should be completed by the due date indicated on MindTap and/or Canvas.**

Group-based Assignments
The course consists of group-based assignments. The assignments could take the form of problem sets and/or essay questions. The problem sets provide an opportunity to practice the quantitative methods covered in class, and typically include complex computation problems. The essay questions provide an opportunity to reflect on the managerial implications of the quantitative methods covered in class. Students are required to form their own groups by the second week of class. **All group-based assignments should be completed by the due date indicated on MindTap and/or Canvas.**

Important
Please note extension or opportunities for makeup quizzes/group-based assignments will not be provided. Students will earn a score of zero for each assignment that they fail to submit by the due date. In the event that a technical problem prevents a student from submitting an assignment by the due date, the instructor may grant the student an opportunity to complete the assignment, **strictly on the condition that the student provides evidence of the technical problem (**e.g., a screenshot of the error message clearly showing the date and time the error occurred). It is the student's responsibility to ensure that he/she captures evidence of the technical error (including **date and time)** at the time that it occurs. Students are therefore advised to ensure that they have a reliable computer and internet access ready before attempting each assignment.

Exams
This course has one final exam. Exam will be during scheduled time period on the date indicated in the syllabus. There are only two excuses that will allow a make-up exam:

- A note from a physician in the case of an illness
- A note from Academic Advising in the case of any other problem.

In either case, you must if possible, notify the professor prior to missing an exam.

Case Study
The course has two case study assignment related to business decisions and quantitative modeling. Students will work with their assigned teams on the cases. Each team will submit a two to three page executive summary of its recommendations (in MS Word or PDF format), along with the Excel spreadsheet upon which the recommendations are based. These documents will be due on the dates posted on Canvas.

Grades

The point allocation and resulting letter grades for the course are detailed below:

Quizzes	**20%**
Group-based Assignments	**25%**
Case Studies	**25%**
Final Exam	**25%**
Excel 365 Prep Course	**5%**
Total	**100%**

Grade Scale (%)

Grade	A	A-	B+	B	B-	C+	C	F
Score	93 - 100	90 - 92.99	87- 89.99	83 - 86.99	80 - 82.99	77 - 79.99	70 - 76.99	Below 70

GENERAL

Office Hours
The office hours are set up to assist students with understanding of the material. Students are STRONGLY encouraged to contact the professor at the first sign of any problem or lack of understanding. Please email the professor to set up an appointment and additional office hours if necessary. Do not wait until it is too late!

Make-Up Exam Policy
The exam dates are published on the course schedule and it is expected that students will be able to take the exams on the specified date. In case of a missed exam due to an approved university absence, students must inform the professor before the exam (if not possible, no later than 24 hours after the exam) and must provide original documentation. There will be no make-up for missed exams without a university approved excuse.

UNCG Academic Integrity Policy:
Students are expected to be familiar with and abide by the UNCG Academic Integrity Policy. Failure to abide will result in appropriate consequences as spelt out in the policy. By submitting an assignment, each student is acknowledging their understanding and commitment to the Academic Integrity Policy on all major work for the course. The Policy can be found at: https://osrr.uncg.edu/

On team assignments, each individual team member must take responsibility for all parts of the assignment or face a potential penalty. On individual quizzes, students are not to share details of their work including computer files or printed output from your computer analysis. Prohibited actions also include working together side-by-side on separate computers. Violations of the Code will result in penalties ranging from an F on the quiz/exam to an F in the course.

Generative AI Integrity Policy:
You are expected to follow the University's Academic Integrity Policy. All ideas, text, images, and other content you submit should be appropriately cited when taken, directly or indirectly, from another source. For purposes of this course, use of generative artificial intelligence (GAI) will be treated analogously to assistance from another person. Unauthorized or unacknowledged collaboration, or the presentation of another's work as your own, is a violation of the Academic Integrity Policy. If you are unsure about whether particular uses of GAI tools may be plagiarism, cheating, or another form of academic dishonesty, please reach out to me to discuss it as soon as possible.

Bryan School Faculty Student Guidelines:
The Bryan School faculty has approved a set of guidelines for the conduct of classes. Bryan Faculty and students in this course are expected to adhere to these guidelines. The guidelines can be found in the link below: https://bryan.uncg.edu/wp-content/uploads/2023/11/Faculty-and-Student-Guidelines-2018-2019.pdf

Health and Wellness:
Your health impacts your learning. Throughout your time in college, you may experience a range of health issues that can cause barriers to your learning. These might include physical ailments, illnesses, strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, or loss of motivation. Student Health Services and The Counseling Center can help with these or other issues you may be experiencing. You can learn about the free, confidential mental health services available on campus by calling 336-334-5874, visiting the website at https://shs.uncg.edu/ or visiting the Anna M. Gove Student Health Center at 107 Gray Drive. Help is always available.

Academic Accommodations:
The University of North Carolina at Greensboro respects and welcomes students of all backgrounds and abilities. If you feel you will encounter any barriers to full participation in this course due to the impact of a disability, please contact the Office of Accessibility Resources and Services (OARS). The OARS staff can meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations. You can learn more about OARS by visiting their website at https://oars.uncg.edu/ or by calling 336-334-5440 or visiting them in Suite 215, EUC.

COURSE SCHEDULE

Note: The course schedule presented below is only tentative and is subject to change.
Any changes in the class schedule or exam dates will be announced on the course website (Canvas).

Week	Date	Topic	Reference Text Chapters
1	12-Jan	Course Introduction/ Descriptive Statistics I	1, 2
2	19-Jan	Descriptive Statistics I/II	2, 3
3	26-Jan	Probability & Probability Distributions	5, 7
4	02-Feb	Statistical Inference I	8
5	09-Feb	Statistical Inference II	9
6	16-Feb	Regression Analysis: Estimation	10
7	23-Feb	Regression Analysis: Statistical Inference	11
8	02-Mar	Review Part I	
		Spring Break	
9	16-Mar	Case Analysis Due	
10	23-Mar	Decision-making under uncertainty I	6
11	30-Mar	Decision-making under uncertainty II/ Introduction to optimization modeling	6,13
13	06-Apr	Optimization models	14
14	13-Apr	Introduction to Simulation Modeling	15
15	20-Apr	Simulation Models	16
16	27-Apr	Course Wrap-up	
	29-Apr	Case Analysis Due	
Final Exam – Monday, May 04, 2026.			