EC 203 Syllabus
Quantitative Tools for Economics and Business
Fall 2022

Instructor: Tim Murray, PhD　　　　　　　　　**Email:** murrayta@vmi.edu
Office: 227 Scott Shipp Hall　　　　　　　　　**Office Hours:** By appointment

Required Material

- Access to Microsoft Excel
- Graphing Calculator

Textbook

There will be no required textbook in this class. Lecture notes are available on Canvas and all course material will be provided in class lectures and on Canvas.

Prerequisites

MA 101 and MA 201 *or* MA 123 and MA 124, with a C or better

Course Description

In this course you will learn the necessary mathematical and statistical techniques used to answer questions in economics and business. You will also learn how to apply these techniques in Microsoft Excel to analyze data. These are tools you will use in future classes and throughout your personal and professional life.

Course Objectives

By the end of the course, you should be familiar with the following topics and concepts:

1. Solving systems of equations and simplifying algebraic expressions
2. Calculate the derivative of a variety of functions
3. Apply algebra and derivatives to solving economic models
4. Use counting rules to calculate probability
5. Calculate expected values using discrete and continuous distributions
6. Conducting and evaluating hypothesis tests

Grading Scale

Letter Grade	Numerical Range	Meaning
A	90-100	Excellent performance
B	80-89	Good performance
C	70-79	Average performance
D	60-69	Below average performance
F	0-59	Unsatisfactory performance

Assignments

Homework	20%
Excel Assignments	10%
2 Midterm Exams	20% each
Final Exam	30%

Homework Assignments
Homework assignments and due dates will be posted on Canvas. Late assignments will receive a grade of 0. Homework will be a large part of how you learn in this class. The lowest homework grade will be dropped.

Submitting Assignments: Homework assignments will be submitted on Canvas as a PDF. This can be done using apps on your phone (e.g., Cam Scanner) or in the library. It is up to you to ensure that your upload is clear and shows all of the problems. The reason for submitting your assignments on Canvas is so that you can have your assignment in front of you as we go over the problems on the day they are due.

Excel Assignments
There will be a series of Microsoft Excel assignments covering statistics and finance. These assignments are to be completed independently. Late Excel assignments will not be accepted.

Exams
There will be two midterm exams and a comprehensive final exam. Midterm exam dates will be announced in class and on Canvas. Students requesting an alternative time must inform me prior to the exam.

Classroom Expectations
Teaching will mostly be conducted via lecture and use of the white board. I encourage you to engage in class, be curious, and ask questions. I encourage you to take handwritten notes during class. Multiple studies show that writing notes by hand improves learning.

While the class will be a learning environment that at times involves dialogue and group work, I expect you to remain professional, polite, and civil at all times. This includes but is not limited to:

- Listening when someone else is talking and no talking over someone else.
- At times we will converse with each other when discussing policy or current events. It is okay to disagree as long as these conversations are done with respect. Lack of respect and civility can result in being asked to leave the classroom.
- During lecture, do not engage in side-bar conversations that will be a distraction.

Attendance Policy
The department subscribes to VMI's "30% rule." No categories of absences (academic, athletic, guard, 3.2 cuts, etc.) are exempt from that percentage. Cadets will be notified upon reading 20% absences. Upon reaching 30% absences, the cadet is referred to the Dean for appropriate action.

Course Topics

The following is a tentative list of concepts and topics that will be discussed throughout the course. Any changes will be announced on Canvas.

Mathematical Concepts	Rules of Exponents
	Linear and Quadratic Systems of Equations
	Graphing and Slope
	Introduction to Derivatives
	Chain Rule, Product Rule, and Quotient Rule
Solving Economic Models with Algebra and Calculus	Supply, Demand, and Elasticity
	The Production Function
	Profit Maximization
	Constrained Optimization and Utility Maximization
Exam 1	
Probability	Counting Rules and Probability
	Expected Value and Discrete Probability
Describing Data and Distributions	Mean and Median
	Variance and Standard Deviation
	Correlation and Covariance
	Normal Distribution
	Poisson Distribution
Hypothesis Testing	One-Sample T-Test
	Two-Sample T-Test
	Using and Calculating P-Values
Exam 2	
Introduction to Finance	Time Value of Money
	Annuities
Final Exam	

Work for Grade Policy and Standards of Conduct

It is your responsibility to carefully read and understand these policies both from VMI and the Department. Copies of these policies are available on Canvas.

Students with Disabilities

VMI abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 which mandate reasonable accommodations are provided for all Cadets with documented disabilities. If you have a registered disability and may require some type of instructional and/or examination accommodations, please contact me early in the semester so that I can provide or facilitate provision of accommodations you may need. If you have not already done so, you will need to register with the Office of Disabilities Services, the designated office on Post to provide services for Cadets with disabilities. The office is located on the 2nd floor of the VMI Health Center. Please call or stop by the office

of LTC Sarah Jones, Director of Disabilities Services, for more information, 540-464-7667 or email at: jonessl10@vmi.edu.

Statement of Diversity and Inclusion

VMI values human diversity in all its richly complex and multi-faceted forms, whether expressed through race and ethnicity, culture, political and social views, religious and spiritual beliefs, language and geographic characteristics, gender, gender identities and sexual orientations, learning and physical abilities, age, and social or economic classes. We respect the value of every member of the class, and everyone in the class is encouraged to share their unique perspective as an individual, not as a representative of any category. Multicultural and intercultural awareness and competencies are key leadership skills. College is supposed to challenge assumptions and to provide new and sometimes uncomfortable ways of looking at issues. If you feel uncomfortable regarding content or perspectives that are presented or discussed by me, your professor, guest speakers, or other cadets, please contact me immediately so that we can discuss those issues. I also ask that you let me know your preferred gender pronoun. Your suggestions on how to incorporate diversity in this course in a meaningful way are appreciated and encouraged.