AEB 3510: Quantitative Methods. FRE-Spring '21

M,W,F | Period 4 (10:40 AM - 11:30 AM) | 3-credits

Classroom: Room: NEB 0202

Instructor and Contact Information

Lecturer: Jordan Moor   TA: Benjamin Avuwadah

Email: JordanMoor@ufl.edu   Office Hours: M,W 11:45-12:45

E-mail is the best way to reach me. You need to be very timely in your emails should issues arise. Any issues that require action MUST be handled by email so that there is a written record of need. Phone calls and after class conversations are not likely to result in action.

Class cancellations, changes in office hours, meeting locations and the syllabus will be announced on e-learning. Be sure that you receive those notifications in a timely manner (controlled in your e-learning settings). Appointments are not necessary during office hours.

Course Description: Develops understanding of finite mathematical tools used in economics and business decision making. Topics include linear equations, matrix algebra and calculus. Lectures and problems show how these tools are used to examine economic, financial and managerial problems.

These mathematical tools will then be applied to common economic models such as market equilibrium and welfare, resource management, constrained optimization, etc.

Expected Student Learning Outcomes: After the successful completion of AEB 3510, a typical student should be able to:

- Demonstrate an understanding of basic mathematical concepts, including algebra, functions, differentiation, integration and multivariate calculus;
- Apply mathematical tools in a variety of economic decision making contexts;

- Conceptualize and solve economic problems using quantitative and analytical models and frameworks;
- Communicate the result of the application of mathematical tools in non-mathematical, professional terms;
- Have basic knowledge of how to develop mathematical models for economic problems using excel;
- Succeed in the senior-level coursework in the Food and Resource Economics Curriculum as they will have acquired the necessary mathematical background and foundations.

Prerequisites: MAC 2233 *or* MAC 2311 or the equivalent. It is further assumed that all students have had at least one economics course (either ECO 2013, ECO 2023 or the equivalent).

Course Materials:

- *Recommended Text: Introduction To Mathematical Economics*, Schaum's Outlines, by Edward T. Dowling. McGraw Hill/Irwin Publishers.
- *E-learning:* There is an E-Learning Canvas webpage for this course. E-learning can be accessed via http://elearning.ufl.edu using your Gatorlink username and password. If you are having difficulties accessing E-learning, please contact the UF Computing Help Desk by calling (352)-392-HELP or via email helpdes@ufl.edu.
- *Other*: This course combines mathematical concepts with practical application and as such, students are required to have a basic knowledge of rudimentary applications of both. Students will need access to excel. If you feel like you do not have an adequate background in math or the use of excel, please use resources such as Kahn Academy (https://www.khanacademy.org/) or Lynda.com (available from http://elearning.ufl.edu) to supplement the classroom materials.

Class Structure: This course is a Hybrid class structure with both in-person and online students. All material will be posted on e-learning as to provide equal access to all students. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Resources for disabled students: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Requests to the DRC for accommodated exams must be made at least 5 days prior to the exam. Failure to meet this deadline may result in a lack of testing accommodations.

Student counseling and support: If something happens in your personal life that has an impact on your academic life, you must go through the Dean of Students Office (contact below) for additional accommodations. If you are experiencing other forms of distress that do not impact your performance in my class, there are several resources available on campus for students (http://www.umatter.ufl.edu/)

Service	Location		Phone
GatorWell Health Promotions Services (works on time management, etc.) (gatorwell.ufsa.ufl.edu)	1st Floor, Reitz Union		273-4450
Dean of students (http://www.dso.ufl.edu)	P202 Peabody Hall		392-1261
Counseling and wellness center (http://www.counseling.ufl.edu/cwc/)	2190 Radio Road		392-1575
Sexual Assault Recovery Services (SARS)	Infirmary Building		392-1161
Student health care center (http://shcc.ufl.edu)	Infirmary Building		392-1161
University Police Department (police.ufl.edu)			392-1111
Career Resource Center (http://www.crc.ufl.edu)	1st Floor, Reitz Union		392-1601
FRE Undergraduate Staff (http://fred.ifas.ufl.edu/undergrad/)	1170 McCarty A		294-7640
UF Help Desk—Technical Support (helpdesk@ufl.edu)	1st Floor, the HUB		392-4357
Library Support (http://cms.uflib.ufl.edu/ask)	online		
Teaching Center (http://teachingcenter.ufl.edu/)	Broward Hall		392-6420
Writing Studio (http://writing.ufl.edu/writing-studio/)	online		846-1138

Academic Honesty: UF students are bound by **The Honor Pledge** which states:

> *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action.

The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor of this class.

Student Responsibility: Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean or Student Honor Court.

Faculty Responsibility: Faculty members have a duty to promote honest behavior and to avoid practices and environments that foster cheating in their classes. Teachers should encourage students to bring negative conditions or incidents of dishonesty to their attention. In their own work, teachers should practice the same high standards they expect from their students.

Administration Responsibility: As highly visible members of our academic community, administrators should be ever vigilant to promote academic honesty and conduct their lives in an ethically exemplary manner. This policy will be vigorously upheld at all times in this course.

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Any instances of academic dishonesty will be reported to Student Judicial Affairs.

Evaluations: Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Professional Etiquette: Use of technology (tablets and computers) is often required to engage in active learning opportunities. You will be informed in advance if these tools are necessary for class. In order to provide a productive environment conducive to everyone's learning, adherence to the following guidelines is expected:

- Technology should be used productively.
- Students are expected to be on-time for class.
- Students who leaving class early all responsible for all material taught.
- Do not be disruptive to the class.

- You are welcome to record lectures and/or take pictures as long as this is not distracting to you, me or your classmates.

If you cannot comply with these expectations, you may be asked to leave the classroom and you will be counted as absent. The instructor reserves the right to penalize any student violating these rules by deducting points from the student's grade as appropriate.

Software Use: All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate

In-Class COVID information: For face-to-face instructional sessions, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

- You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.
- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.•
- If you are experiencing COVID-19 symptoms (https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html),please use the UF Health screening system and follow the instructions on whether you are able to attend class. (https://coronavirus.ufhealth.org/screen-test-protect/covid-19-exposure-and-symptoms-who-do-i-call-if/).

Online Participation and Privacy Information: Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Course Assignments:

In-class attendance: Be in class on time and pay attention. 90% or higher attendance will garner full points. Every additional absence will result in a loss of 5 points.

Application projects (best 3 of 5): There will be five assignments that will require the use of excel to apply mathematical methods to economic problems. These should be typed and thorough. These are individual assignments and you must submit both your excel and word document online for full credit. Late submissions will be penalized 10 points per day late.

Midterm exams (2): Each exam will include multiple choice and long-answer questions related to assignments, readings and lectures. All exam exams will be proctored using Honorlock.

Final Exam: A cumulative final will be given as a make up for a missed midterm or to replace a midterm score. Final Exam: 4/29/2021 @ 12:30 PM - 2:30 PM.

Composition of Final Score

Course Assignments	Total Points	% of Total Grade
Attendance	50 points	12.5%
Excel Projects	150 points (50 points each)	37.5%
Midterm exams (2)	200 (100 points each)	50%
Optional Final Exam (comprehensive)	100 points	
Total	400 points	100%

Student Evaluation: Grades will be assigned as follows (note no minuses will be awarded)

Grade	Percentage	Grade Points
A	90.0% or more	4.00
B+	86.0 – 89.9%	3.33
B	80.0 – 85.9%	3.00
C+	76.0 – 79.9%	2.33
C	70.0 – 75.9%	2.00
D+	66.0 – 69.9%	1.33
D	60.0 – 65.9%	1.00
E	≤ 59.9%	0.00

This class adheres to UF grading policies:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

**Please note that grades are not 'rounded' or 'adjusted' at the end of the term. Haggling over grades at the end of the semester is NOT entertained. Of course, if there is an error in recording a grade, I will gladly give you the correct points. If you believe that your exam is incorrectly graded or that your grade is incorrectly posted, please contact me via e-mail (i.e., in writing) as

soon as possible. You have 7 days after the grade has been posted to voice your concern. After 7 days have passed, your posted grade will be assumed to be correct and accurate.

Academic Performance: Your grade on e-learning throughout the semester may not reflect your true performance in the course. You will earn points for correct quizzes and exams throughout the semester and it is up to you to determine your progress in the course. It is my goal to teach students and not to "give grades" as I believe grades are earned. As such, consider the following guidelines when you have questions about your grade or class performance:

- If you have any questions about your score at any point, you may come to the professor during office hours to clarify the number of points you have and what points will be required to achieve your desired grade.

- Do NOT ask for clarification of your grade in class or after class. This type of discussion is reserved for office hours or email correspondence.
- Do NOT email me or come to office hours expecting to change your score on a given assignment unless an egregious error has been made in entering your grade into canvas (i.e. you failed to get credit for a completed assignment or an exam grade was entered incorrectly).
- Do NOT ask for additional points throughout the semester. It may be the case that bonus opportunities to gain additional points will be available; however, this is determined solely by the professor based on an assessment of the relevance of additional activities to course materials and learning objectives.

Course Topics: This course is broken into two main sections: calculus and linear algebra. The course is cumulative in that the material builds on each other. While students are expected to have seen most material introduced in this course in previous courses, this course focuses on mastery of quantitative concepts and applications of quantitative concepts to the study of business and economic models. If at any point you do not understand the material, you must seek additional help from the instructor, teaching assistant or a tutor as mastery of the material at each section is required to move on to the next section.

Course Schedule:

Topic	Lecture Material	Dates
Part 1		
Algebra Review	Ch. 1	01/11 - 01/15
Graphs & Equations	Ch. 2	01/18 - 01/22
System of Equations	Ch. 3	01/25 - 01/29
Derivatives	Ch. 4	02/01 - 02/05
Marginal Concepts	Ch. 5	02/08 - 02/12
Log & Exponential Review	Ch. 6	02/15 - 02/19
Optimization	Ch. 7	02/22 - 03/01
Review		03/3
Midterm 1		03/05
Part 2		
Multivariate Calculus	Ch. 8	03/08 – 03/12
Linear Algebra Operations	Ch. 9	03/15 – 03/19
Linear Algebra & Systems	Ch. 10	03/22 – 03/26
Optimization	Ch. 11	03/29 – 04/02
Matrix Inversion	Ch. 12	04/05 – 04/09
Integral Calculus	Ch. 13	04/12 – 04/16
Review		04/19
Midterm 2		04/21
Optional Final		04/29

The lecturer reserves the right to change the terms and dates stated in this course syllabus at any time. Any changes will be communicated in class, via the Gatorlink e-mail listserv, and posted on E-Learning. It is the student's responsibility to stay informed of any changes.

By enrolling in this course, you are agreeing to the terms outlined in this syllabus

I look forward to a fun and productive semester with you all!