Syllabus
AEB3510 - Quantitative Methods in Food and Resource Economics
Fall 2021

Instructor: Quanquan Liu

Lecture: Mon, Wed, Fri 12:50 PM - 1:40 PM

Lecture Location: PSY 0151

Office: Stuzin Hall (STZ) 351A

Office Hours (virtual): Fri 10:00 AM – 12:00 PM

Zoom: https://ufl.zoom.us/j/7326082177

In-person meeting is also available by appointment, mask required.

Email: quanquan.liu@ufl.edu

Teaching Assistant: Ruojin Zhao

Office Hours: Wed 10:00 AM – 12:00 PM

Zoom: https://ufl.zoom.us/j/4819297233

Email: ruojinzhao@ufl.edu

Course Description

Mathematical theory and concepts related to linear, non-linear and logarithmic functions, calculus, optimization and matrix algebra will be introduced. These mathematical tools will then be applied to common economic models such as market equilibrium and welfare, resource management, constrained optimization, etc.

Course Objectives

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).

Textbook and Materials

TEXTBOOK: Mathematical Methods for Business and Economics, Schaum's Outlines, by Edward T. Dowling. McGraw-Hill Companies, Inc. 1993. ISBN: 978-0071635325.

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. 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.

Grading

Your grade in this course will be determined by the following assignments:

1. Midterm Exams (2, 40%) - **Dates:** October 4 & November 8 respectively, in class; Each exam will include multiple choice questions related to assignments, readings and lectures.
   - The dates of the midterm exams are tentative and maybe moved depending on how quickly we cover the assigned material. The exact date for each test will be announced in class at least one week in advance.
2. Final Exam (30%) - **Date:** December 16, 2021 @ 12:30 PM - 2:30 PM; The final exam is cumulative. It will include multiple choice and long-answer questions related to assignments, readings and lectures.
   - All exams are **closed book**. You will need a **calculator** and you are responsible for bringing this calculator to the exam. Calculators on phones, computers, or other electronic devices are not allowed. If you arrive at an exam without a calculator, one will not be provided for you and you may not use your phone.
3. Application projects (4, 20%): There will be four 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 not be accepted.
4. In-class quizzes (best 10 of 13, 10%): There will be quizzes during the regular class times where I will test you over the course materials. Quizzes ensure that you are prepared for class and are on track to pass exams. Missing a quiz results in a grade of 0. No make-up quizzes are given, as you are allowed no fewer than 3 drops.

Exams are mandatory and you are expected to make every effort to attend them. If you miss an exam, you must take the following three steps:

1. Contact me at least 24 hours before the exam. If I do not hear from you in that time, you will receive a zero for the exam.
2. Provide documentation of exigency.* I reserve the right to assign a grade of zero for the exam for reasons I deem less than exigent.
3. Student who misses the midterm could, at the instructor's discretion, be permitted to drop the midterm and have the final count as an additional 20% of the student's grade. Student who misses the final must take the make-up exam at a time of the instructor's choosing. If the student cannot make that time, he/she will receive a zero for the exam. The final exam is comprehensive.

* - Note that providing false or misleading documentation will result in a failing grade for the course, along with any other university penalties that accompany a violation of the Academic Integrity Policy.

Letter Grade Distribution

Score	Letter Grade	Score	Letter Grade
93 and above	A	73 - 76.99	C
90 - 92.99	A-	70 - 72.99	C-
87 - 89.99	B+	67 - 69.99	D+
83 - 86.99	B	63 - 66.99	D
80 - 82.99	B-	60 - 62.99	D-
77 - 79.99	C+	59.99 and below	F

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

Attendance

Attendance is highly recommended. We have in-class quizzes that also serve as attendance checks. Quizzes should be considered a good guide for understanding the materials. Remember, if you miss a class meeting you are expected to obtain notes and other material on your own.

Homework

Students are required to complete application projects. Each assignment has a specific time by which it must be completed. Early homework is accepted, late homework is not. Students are encouraged to work together on the problem sets but must turn in their own work.

If you need help, if you didn't understand something, or you just need more practice: come to office hours. Office hours do NOT require an appointment and are time set aside for students to come in and ask for help. You can attend office hours for your instructor and for the Teaching Assistant. We can all help you, and will be happy to see you.

Syllabus and Lecture Notes

All class materials will be posted on E-Learning. You are encouraged to print out a copy of the lecture notes and bring them to class so that you may annotate them. You may want to reformat the lecture notes to condense them to save paper. All communication about the course will be sent out in emails and also posted in the "Announcements" tab in E-Learning.

University Policies

Students Requiring Accommodations
Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students are notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

In-Class Recording
Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled.

The only allowable purposes are: (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises

involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy
UF students are bound by The Honor Pledge: "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." The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Click here to read the Conduct Code. If you have any questions or concerns, please consult with the instructor or TAs in this class.

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. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the Notification to Students of FERPA Rights.

Campus Resources:

Health and Wellness
U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.

University Police Department: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.

Academic Resources
E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information.

On-Line Students Complaints: View the Distance Learning Student Complaint Process.

Schedule of Lectures and Readings

Course Topics: This course is broken into two main sections: solving systems of equations and calculus. 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:

Week (Dates)	Content
Week 1 (Aug 23, 25, 27)	Chapter 2. Equations and Graphs
Week 2 (Aug 30, Sep 1, 3)	Chapter 3. Functions
Week 3 (Sep 8, 10)	**No class on Sep 6 (holiday)** Chapter 4. Systems of Equations
Week 4 (Sep 13, 15, 17)	Chapter 4. Application Project 1 – Sep 13 Chapter 5. Linear (or Matrix) Algebra
Week 5 (Sep 20, 22, 24)	Chapter 5. Chapter 6. Solving Linear Equations with Matrix Algebra
Week 6 (Sep 27, 29, Oct 1)	Chapter 6. Review (Q&A) – Oct 1
Week 7 (Oct 4, 6)	**MIDTERM 1** – Oct 4 in class Input-Output Analysis Application Project 2 – Oct 6 **No class on Oct 8 (homecoming)**
Week 8 (Oct 11, 13, 15)	Chapter 7. Linear Programming: Using Graphs Chapter 9. Differential Calculus
Week 9 (Oct 18, 20, 22)	Chapter 9.

Week 10 (Oct 25, 27, 29)	Chapter 10. Differential Calculus: Uses of The Derivative
Week 11 (Nov 1, 3, 5)	Chapter 10. Application Project 3 – Nov 3 Review (Q&A) – Nov 5
Week 12 (Nov 8, 10, 12)	**MIDTERM 2** – Nov 8 in class Chapter 12. Integral Calculus
Week 13 (Nov 15, 17, 19)	Chapter 12.
Week 14 (Nov 22)	Chapter 13. Calculus of Multivariable Functions **No class on Nov 24 and 26 (holiday)**
Week 15 (Nov 29, Dec 1, 3)	Chapter 13.
Week 16 (Dec 6, 8)	Chapter 13. Review (Q&A) – Dec 8 **No class on Dec 10 (reading days)**
Week 17 (Dec 16)	**FINAL** – Comprehensive @ 12:30 PM - 2:30 PM

* - Dr. Liu 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!