

## Quantitative Methods in Food and Resource Economics

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Spring 2018

Period 7, Monday, Wednesday & Friday 1:55 pm – 2:45 pm

Classroom: McCarty Hall B, room G086

### Instructor and Contact Information

Misti Sharp
Office: 1193 McCarty Hall A
Office Hours: Tuesday and Thursday from 8:30-10:25 am and by appointment
Computer lab office hours: Wednesdays from 10:40-12:35 in McCarty Hall B, room 3086
Email: <a href="mailto:mistisharp@ufl.edu">mistisharp@ufl.edu</a> (preferred) Phone: 352-294-7632
Graduate TA: Lauriane Yehouenou, <a href="mailto:lyehouenou@ufl.edu">lyehouenou@ufl.edu</a> , Tuesday/Thursday 11:00-12:00
Undergraduate TA: Justin Burt, <a href="mailto:burtju@ufl.edu">burtju@ufl.edu</a> , Monday/Wednesday: 11:45-12:35
<i>TA hours will be held in McCarty B 1094A for Lauriane and in McCarty A 1170 for Justin</i>

### Communication:

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. Groups of students are welcome.

### 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.

**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).

**Required Course Materials:**

- **Text:** *Mathematical Methods for Business and Economics*, Schaum's Outlines, by Edward T. Dowling. McGraw Hill/Irwin Publishers. 2009. ISBN: 0071635327.
- **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 [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).
- **Top Hat:** We will be using the Top Hat ([www.tophat.com](http://www.tophat.com)) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message.
  - You can visit the Top Hat Overview (<https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide>) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.
  - An email invitation will be sent to you by email, but if don't receive this email, you can register by simply visiting our course website: <https://app.tophat.com/e/580291>
  - Note: our Course Join Code is 580291
  - Top Hat will require a paid subscription, and a full breakdown of all subscription options available can be found here: [www.tophat.com/pricing](http://www.tophat.com/pricing).
  - Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email ([support@tophat.com](mailto:support@tophat.com)), the in app support button, or by calling 1-888-663-5491.
- **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.

**Expectations and feedback:**

I expect students to attend every class prepared to contribute and learn. This means that there should be no texting or otherwise distracting behavior during my lectures. I will do my best to conduct organized and insightful class sessions and to treat your intellectual work with fairness and impartiality. It is your choice to succeed or not succeed in my class and "success" means different things to different students. From my perspective, successful students are those who 1) do the readings, 2) do the assignments including non-graded assignments, 3) attend class, be attentive and participate in discussions/polls, and 4) study for exams. If you begin to struggle, it

## Course Syllabus: AEB 3510

is your responsibility to come see me to determine what steps should be taken on your part to ensure your success in the class.

**Academic Integrity:** <https://www.dso.ufl.edu/sccr/honorcodes/conductcode.php>

This course will adhere to the Academic Integrity Honor Code of the University of Florida: *We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.* I expect all work that you do in the course to be your own. Violations of the Academic Honesty Guidelines will result in judicial action.

### Resources for disabled students:

If you have a documented disability and wish to discuss academic accommodations, please contact the dean of students as soon as possible to set up the appropriate arrangements. A minimum of 5 business days are required to request an exam. Further information can be found at <http://www.dso.ufl.edu/drc/>.

### 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
Dean of students ( <a href="http://www.dso.ufl.edu">http://www.dso.ufl.edu</a> )	P202 Peabody Hall	392-1261
Counseling and wellness center ( <a href="http://www.counseling.ufl.edu/cwc/">http://www.counseling.ufl.edu/cwc/</a> )	2190 Radio Road	392-1575
Student health care center ( <a href="http://shcc.ufl.edu">http://shcc.ufl.edu</a> )	Infirmery Building	392-1161
Career Resource Center ( <a href="http://www.crc.ufl.edu">http://www.crc.ufl.edu</a> )	1 <sup>st</sup> Floor, Reitz Union	392-1601
FRE Undergraduate Staff ( <a href="http://fred.ifas.ufl.edu/undergrad/">http://fred.ifas.ufl.edu/undergrad/</a> )	1170 McCarty A	294-7640

**Class Structure:** This is a traditional lecture class. All material will be posted on e-learning so as to provide equal access to all students but the only way to be sure you have all material and information is to attend class daily.

**Course Assignments:**

*Weekly assignments (best 10 of 12):* Each week with the exception of exam weeks, there will be review problems and exercises related to the course material that will be generally due by midnight on Friday. These may be written or typed. These assignments must be uploaded into e-learning before the time they are due. Late submissions will receive a grade of 0.

*Application projects (best 3 of 4):* 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 be penalized 10 points per day late.

*Midterm exams (2):* Each exam will include multiple choice questions, a long-response question with multiple parts. All material will be related to assignments, readings and lectures.

*Final Exam:* A cumulative and compulsory final will be given on Monday, April 30<sup>th</sup> at 7:30 – 9:30 am in the regular classroom.

**Composition of Final Score**

Course Assignments	Total Points	% of Total Grade
Weekly assignments (best 10 of 12)	100 points (10 points each)	20%
Application project(s) (best 3 of 4)	150 points (50 points each)	30%
Midterm exams (2)	150 (75 points each)	30%
Final Exam (comprehensive)	100 points	20%
<b>Total</b>	<b>500 points</b>	<b>100%</b>

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

Grade	Percentage	Total Points	Grade Points
A	90.0% or more	≥ 450	4.00
B+	86.0 – 89.9%	430 – 449	3.33
B	80.0 – 85.9%	400 – 429	3.00
C+	76.0 – 79.9%	380 – 399	2.33
C	70.0 – 75.9%	350 – 379	2.00
D+	66.0 – 69.9%	330 – 349	1.33
D	60.0 – 65.9%	300 – 329	1.00
E	≤ 59.9%	≤ 299	0.00

***Your final letter grade will be posted on e-learning after the final exam. The professor has the right to change this point structure at any point so long as it improves the student’s final score.***

### **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 assignments 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: 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 Syllabus: AEB 3510

**Course Schedule:**

Topic	Week	Lecture Material
Part 1: Solving Systems of Equations		
Equations and Graphs, Functions	1	Dowling: Ch. 2-3
Systems of Equations, part 1	2	Dowling: Ch. 4
Systems of Equations, part 2	3	Dowling: Ch. 4
Matrix Algebra	4	Dowling: Ch. 5
Solving Linear Equations	5	Dowling: Ch. 6
Economy-wide Modeling	6	Additional materials
Exam Week	7	Midterm 1: February 23 <sup>rd</sup>
Part 2: Calculus		
Introduction to calculus	8	Dowling: Ch. 9
Spring Break: March 5 <sup>th</sup> – 9 <sup>th</sup>		
Differential Calculus	9	Dowling: Ch. 10
Univariate Optimization	10	Dowling: Ch. 10
Marginal Concepts in Economics	11	Dowling: Ch. 10
Multivariate Calculus	12	Dowling: Ch. 13
Multivariate Optimization	13	Dowling: Ch. 13
Constrained optimization	14	Dowling: Ch. 13
Exam Week (final review April 25 <sup>th</sup> )	15	Midterm 2: April 23 <sup>rd</sup>
Final Exam: Monday, April 30 <sup>th</sup> at 7:30 – 9:30 am		

*Mrs. Sharp 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.*