University of Florida
College of Agricultural and Life Sciences
Food and Resource Economics Department

# **AEB3510** Quantitative Methods in Food and Resource Economics Fall Term 2019

3 Credit Hours

## **Instructor and Contact Information**

**Instructor**: Luis Moisés Peña Lévano, Ph.D.

Office: 1200 N Park Rd, Office # 104, Plant City, FL, 33563

E-mail: lpenalevano@ufl.edu

Office hours: In Person Gainesville: McCarty B, room 1125

(Schedule below)

Plant City: 1200 N Park Rd, Office #104

Tuesdays at 1:30 pm - 2:30 pm

Online Thursdays (11:30 am to 12:30 pm), by appointment.

**Review sessions:** Gainesville: McCarty A, room G108 (Schedule below)

Plant City: Main Auditorium, room 139 (Tuesdays, 1:30 pm – 2:30 pm)

Teaching Assistant: Yefan Nian
Office: McCarty
F-mail: yfnian@ufl.edu

Office hours: In-office hours (Gainesville): Monday & Wednesday: 12:50 - 1:50 pm.

McCarty A 1172.

Zoom office hours: Monday and Wednesday: 12:50 pm to 1:50 pm (Meeting

ID: 648 704 861 or +1 646-558-8656) https://ufl.zoom.us/j/648704861

Communication must include 'AEB3510 – UNIT #\_\_\_\_ + (YOUR LAST NAME + FIRST NAME)'. All emails should be copied to the teaching assistant [TA] in order to be answered. Use the Canvas Email to contact the instructor. Any email must be sent during NORMAL HOURS: Monday to Fridays 8:00 am – 5:00 pm. Emails sent outside the normal hours, or not using the title 'AEB3510', or not copied to the TA may not be answered.

The emails will need to go through the following procedure:

- I. Consult to the TA during the TA office hours to solve any doubts. No emails will be addressed by the instructor if you have not communicated with the TA first.
- 2. Summarize in **one paragraph** of **no more than three** lines the e-mail question so that I can more effectively address your concerns. If you are stuck on a specific procedure, send us the picture of the problem and where you are specifically having the issue. This will help me to provide feedback. If you do not put an effort in attempting to solve the question, I will not provide you the hints to solve it
- 3. Courteous and professional e-mails may expect a prompt reply.
- 4. I will hold office hours days and review sessions in-person in Gainesville. Notice that I am located at **Plant** City, FL, therefore I will go to main campus only for review sessions and office hours.
- 5. Review sessions will be provided in both locations. Additional examples and any questions will be addressed.

The professor reserves the right to change the terms and dates stated in this Course Syllabus depending on upcoming or unexpected events. Any changes will be communicated in class, via the Gatorlink e-mail listserv, and posted on E-Learning Canvas. It is solely the student's responsibility to stay informed of any changes

## **General Course Information**

#### Textbook:

**Required:** Mathematical Methods for Business and Economics, Schaum's Outlines, by Edward T. Dowling. McGraw Hill/Irwin Publishers. 1993. ISBN: 0-07-017697-3.

**Required:** Schaum's Outlines of Introduction to Mathematical Economics, by Edward T. Dowling. 3rd Edition. McGraw-Hill Publishers. 2012. ISBN: 978-0-07-161015-5

• You will need a copy of both books. Please note that there are several editions of the book, all with different covers. All versions are the same, so either one would work



<u>Course Description</u>: This course is intended to develop the student's understanding of finite mathematical tools used in economics and business decision-making. Topics include linear equations, matrix algebra, linear programming and calculus. Lectures and problems will show how these are used to examine economic, financial and managerial problems. Likewise, in further topics we will make use of Excel to solve mathematical configurations. We will also cover some advanced topics, such as multivariate calculus, Lagrange multipliers, integration, and application of matrix algebra in calculus.

AEB3510 is an applied mathematics course. Up to this point, most mathematics courses you have taken have focused on computational mathematics. This course, however, will emphasize mathematical reasoning and methodology applied in economic problems.

Time devoted to the class: This is an upper-division 3-credit course and it is structured and taught accordingly. This course is the base for many other classes in FRE. Thus, the importance in the curriculum means you should plan on spending time to review the online lectures. Each day in the business-day calendar corresponds to approximately between 35-40 minute per day (or 3 hours of videos per week). Thus, some units have more content than others, and therefore, more days are spent on them (especially Units 07-11). The specific distribution of the class is described in the timeline (Page 8). The number of questions and level of difficulty of the assignments are correlated with the numbers of days devoted to the unit. During exam weeks, the time-commitment will be significantly higher. So please study ahead of time to expect a good grade in this class.

<u>Grading system</u>: The grading system is online through Canvas. This is an automatic/systematic process. Thus, the instructor does not generally insert the grades. The system automatically grades it and tabulate it. The purpose of the professor in this class is to **instruct you** in the course, not to directly grade you. Thus, it is your responsibility to obtain good grades, not the instructor to give it. Please, submit the assignments before the deadlines and perform well in the class.

<u>Prerequisites</u>: MAC2233 or MAC2311 (or the equivalent). AEB3510 is taught with the assumption that all students are comfortable with quantitative reasoning, analytical methods, derivatives, graphs, and algebra. It is further assumed that all students have had at least one economics course (i.e., either ECO2013, ECO2023, AEB3103 or the equivalent).

It is also expected that students must have basic knowledge of Excel. We will use standard Windows Excel version. Please install it in your laptops and plan accordingly.

Course objectives: After the successful completion of this course, students should

- 1. Be able to use calculus and algebra in economic optimization
- 2. Understand the mathematical principles required to maximize consumers satisfaction
- 3. Be able to analyze the impact of changes of external variables in an optimization problem
- 4. Be able to use linear programming to optimize firms' goals
- 5. Have a strong foundation necessary to succeed in the FRE major

**Brief Course Outline:** The material in AEB3510 is divided in twelve units, each subdivided in **chapters** 

	rial in AEB3510 is divided in twelve unit						
Hmw   Chapter   Description							
	UNIT 1. SYSTEM OF EQUATIONS						
1	1 Linear Equations						
1	2 System of linear equations 3 2x2 system of linear equations						
1	4 Solving systems of linear Equations						
1	5 Economic applications of linear equations						
	UNIT 2. FUNCTIONS						
1	6 Mathematic operations						
1	7 Functions and Polynomials						
1	8 Quadratic functions						
1	1 9 Exponential and Logarithmic functions						
-	UNIT 3. MATRIX ALGEBRA						
2 2	10 Fundamental Matrix operations						
2	11 Matrix and Vector Multiplication 12 Linear independence and determinants						
2	13 Linear equation in matrices						
2	14 Inverse matrices						
2	15 Cramer's rule						
2	16 Applications: Input-Output Table						
	UNIT 4. FOUNDATION OF DERIVATIVES						
3	17 Limits and the principle of derivatives						
3	18 First-order derivatives						
3	19 Derivatives of compounded functions 20 Higher order derivatives						
3	EXAM 1						
	UNIT 5. DERIVATIVE APPLICATIONS						
4	21 Derivatives tests						
4	22 Optimization						
4	23 Sketching graphs						
4	24 Derivatives: Application in economics						
	UNIT 6. PARTIAL DERIVATIVES						
5 5	25 First order partial derivatives 26 Cross and second order derivatives						
5	27 Optimization of functions						
5	28 Constrained optimization: The Lagrange function						
	UNIT 7. SPECIAL MATRICES						
6	29 Minors, cofactors and Gradients						
6	30 Discriminants & Jacobian						
6	31 Hessian matrices: Optimization						
6	32 Bordered-Hessian: Constrained optimization						
	EXAM 2 UNIT 8. LINEAR PROGRAMMING						
7	33 Inequalities						
7	34 Linear optimization						
7	35 Dual & Primal in LP						
7	36 Excel Application: LP Problems						
	UNIT 9. LP & SENSITIVITY ANALYSIS						
7	37 Dual & Primal in LP						
7	38 Excel: Application of regression models UNIT 10. INTEGRALS						
8	39 Indefinite integrals						
8	40 Definite integrals & Areas						
8	41 Integration techniques						
8	42 Integral application in economics						
	UNIT 11. COMPARATIVE STATICS & OPTIMIZATION						
9	43 Total differential						
9	44 Comparative statics						
9	44 Comparative statics in optimization						
9	45 Concave optimization  EXAM 3						
UNIT 10. MATRIX IN STABILITY & ECONOMETRICS							
10	46 Differential Equations						
10	47 Probabilities						
10	48 Applications: Multivariate Regressions						
	FINAL EXAM						

## **Evaluation of Performance and Grading**

<u>Grades</u>: You have the *opportunity* to earn up to 1000 points throughout the semester. Your final grade in AEB3510 will be composed by the following items described on the right figure.

I. Pre-lab assignments: Each unit is divided in chapters. In order to motivate reading completely through the whole material, there will be pre-labs which are from 4 to 5 questions based on examples explained in the videos (overall one question per chapter). It is your task to follow step by step and use your own words and understanding to present the

Description	Quantity	<b>Unit Value</b>	Total			
Prelabs	12	10	120			
Quiz	12	10	120			
Homework	10	35	350			
Excel projects	3	15	45			
Midterms	3	100	300			
Final Project*	1	15	15			
Final Exam	1	50	50			
TOTAL						

material. Copy paste from the video is not permitted. Students are required to show the reasoning on the topics. Pre-lab assignments are expected to be submitted by 8:59 pm of the due date. After that time, the points earned is zero [0] points.

- **2. Quizzes:** There is one quiz per unit. The duration is 15-20 minutes, and these are 2-3 short questions. These are open book. Submission deadline is at 11:59 pm. Note, the first quiz is based on this syllabus. For Units 07 to 11, you have **two** opportunities to take the quiz.
- 3. Homework Assignments: There are 10 assignments, each assignment is worthy 35 points. All assignments must be clearly written showing the reasoning step by step. All assignments are expected to be submitted by 8:59 pm of the due date. Late homework submissions will be not be accepted\*. However, there is one unit for make-up opportunities (See section 6). Please note that homework assignments are 35% of your total grade. All homework must be submitted online through canvas using the following title: AEB3510 ASSIGNMENT # %LAST NAME% %FIRST NAME%

Assignments' questions depend on the number of days and complexity of the units. Overall each unit is composed by two parts:

- Theory & short answers: Short questions worthy of 4-5 points (and it is equivalent to one-day class)
- Practical part: ONE Problem for each day of classes (not including Saturdays, Sundays or holidays).

Overall each assignment has between **four** (minimum) to **seven** practical problems (maximum), depending on how many days are devoted for the unit, considering that each assignment is worthy **35 points**.

For example, Assignment 01 (composed by unit 01 & 02) covers **seven** business-days (not including Saturday, Sunday). Thus, it will have **five** problems and **one** group of theory/short questions. Assignment 02 (composed by unit 03) covers **four** business-days (not including Saturday, Sunday or Labor Day). Thus, the assignment will have **four** problems and **one** group of theory/short questions.

**NOTE:** Students are expected to ask any **questions under the normal hours of 8:00 am – 5:00 pm from Monday to Friday.** Questions after 5 pm are expected to be answered the next business day. Deadlines for Pre-labs and Assignments are until 9:00 pm to give students the opportunity to refine their work and review any detail. You are allowed to talk with your colleagues with respect to the assignments; however, **COPYING EVEN PARTIAL PORTIONS OF ASSIGNMENTS FROM COLLEAGUES INVALIDATE YOUR WORK AND YOUR COLLEAGUE.** This is applied to ALL ASSIGNMENTS, Excel Applications, Mini-Project and EXAMS.

**4. Excel Applications:** Excel skills are expected on this class. Three units have Excel Applications, each worthy **15 points**. Lab sessions will be provided by the TA for the Excel Applications. Please review Excel and the Solver Tool. Note: you need to create your Excel file from scratch. **Using a classmate's template is not permitted**.

- 5. Final Mini project: In this task, you will create and solve one math economic problem using any of the topics of your choice learned in this class. You need to be imaginative: use a TV show, anime, soap opera, history, peer-reviewed journal news or any other material. Originality is key. The basis is 15 points, but you can earn up to 10 bonus points if you do an outstanding job. The deadline of the mini project for Fall2019 is November 15<sup>th</sup> at 5:00 pm. You cannot repeat any example from the class or the books, this would disqualify your project.
- **6. Mid-terms**: There will be three regular exams ('Mid-term exams') offered during the semester. Each exam is worth 100 points. The exams will consist of different multiple-choice, true/false and math-solving questions. Midterms are taken via **Proctor-U**, the time you can take each midterm is 0:00 am to 8:00 pm of the exam day.
  - **For Gainesville students:** There are opportunities to take **in-person** exam. You can take the exam the date of the exam at 8:00 pm (which are Mondays). This exam will be provided by the TA.
  - For Plant City students: There is an opportunity to take the in-person exam during Tuesdays of the exam-date at 8:15 am. This is proctored by the professor of the class.

The exam takes **75-100** minutes to be solved (depending on the midterm). I will provide 10 more minutes in order to avoid issues in the system. Please notice the following details:

- For midterm 01: No calculators are allowed.
- For midterm 02 and 03: You are allowed any calculator.

You are allowed to write **one cheat sheet** for each midterm; however, you need to **upload it the day before the midterm** in order to be valid for use. You need to **delete all scratch paper** upon finishing each midterm. You can bring a copy of the cheat sheet you prepared for the exam for the in-person exam.

- 7. Final Exam: A comprehensive mandatory Final Exam is given on December 9th. This counts as 5% points of your final course grade. Early or late exams are not given. Please plan accordingly.
- **8. Final practice problem set:** A final problem set will be provided which will cover all the units of the class (about one question per unit). This will review all content of the class as a final review. This is intended to provide you with a summary of the skills you have learned. In addition, if 85% of the class fills out the class evaluation, the final practice exam will be worthy of 10 bonus points (with due date on **Wednesday December 3<sup>rd</sup>, 2019**)

#### 9. Bonus Points and Make-up Opportunity

There are five ways to obtain individually bonus points

- (I) If your mini-project (described in section 6) is written in a state-of-art manner, it can receive up to **10 more bonus questions**.
- (2) In each review session by Dr. *Luis*, the professor will provide 'Bonus Question'. The total bonus points given during the semester is **10 bonus points**.
- (3) For each visit (in-person or online) to the TA, you receive I bonus point. The maximum is 5 bonus points.
- (4) For each time you attend a lab session with the TA, there are 2 bonus point once you finish the session. The maximum from the three sessions is **5 bonus points**.
- (5) From every pre-lab, the professor may choose the best two/three pre-labs in terms of organization, style, explanation and clearness. If you are selected, the professor will ask you to upload it as the sample solution for the pre-lab (anonymously). As a reward for such a nice work, **I bonus point** is given towards the final grade. Disclaimer: The professor reserves the right to select the best pre-labs, the selection is solely focused on the work quality.

## There are two ways to unlock collectively bonus points

- (5) There is a **mid-semester** survey. If 85% of the class fills out the survey, this will unlock **one bonus question** for Midterm 02 (worthy **5 bonus points**).
- (6) If 85% of the students fills out the end-of-semester faculty evaluation, there are the following incentives:
  - 1. This will make the Final Practice Problem to be worthy 10 bonus points.
  - 2. In addition, if goal is achieved by **November 24**th at 4:59 pm, there will be a bonus question of **5 points** for Midterm 3.
  - 3. This unlocks the opportunity to unlock the Exception Rule (if achieved by November 24th at 4:59 pm)

Thus, encourage your classmates to fill out the surveys and faculty-class evaluation! It is for the benefit of everyone! NOTE: The 85% participation is feasible and has been previously achieved by several of the predecessor classes.

## Make-up opportunities

There is one make-up unit: Unit 13 (Optimal control Theory). This unit provides an optional pre-lab (10 pts) and Homework Assignment (30 pts), which can replace the lowest pre-lab or assignment. In that way, if you have an adverse event, you may have the opportunity to use Unit 12 to make up for the missed assignment/pre-lab.

**EXCEPTION RULE:** This class is based on 1000 points. If 85% of the class or more fills out the faculty evaluation before November 24th at 4:59 pm, this unlocks the following special opportunity: students that have submitted all assignments on time and with total current scores either:

- i) 890 points or more (not including bonus points) OR
- ii) 915 points or more (including bonus points) by November 25th at 11:59 pm, The student will be exempt to take the final exam and receives an A in the class.

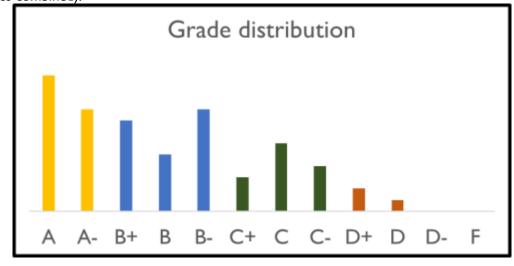
**NOTE:** In total, you can earn up to **50 possible bonus points**, equals to **5%** of the total grade and equivalent to the value of the FINAL EXAM. This can make a change in letters (from B+ [870] to A [930] for example). No other opportunities to increase your score will be given.

Final	Minimum
Grade	Score
A	930
A-	900
B+	870
В	830
B-	800
C+	770
С	730
C-	700
D+	670
D	630
D-	600
F	0

#### **10. FINAL GRADE**

Final course grades will have the following benchmarks out on **1000** possible grade points as described on the left figure. 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 I did a mistake in grading your exam 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 **2 business days** after the grade has been posted to voice your concern. After 2 days have passed, your **posted grade will be assumed to be correct and accurate**. For general information about grading and grading policy at the University of Florida, please refer to: http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html.

<u>Previous Grades distribution</u>: The right figure provides the previous grade distribution (of all students have taken my class combined).



#### **Extenuating Circumstances**

Exceptions to the Missed Assignment Policy reflect excused University events that fall under the 12-day rule or are serious in nature. These exceptions referred as "Extenuating circumstances" require formal, letter-head documentation from a UF faculty/academic advisor, or an email from the UF Dean of Students Office sent to the instructor's UF email address, within 24 hours before assignment deadline. A health-clinic note DOES NOT warrant extenuating circumstances and the "Missed Assignment" Policy (above) will apply.

## **Student Responsibility for Online Submissions**

Students are responsible for ensuring and verifying that all assignment files are uploaded successfully into Canvas. The professor and TA are not responsible for internet connections or failures. Students are strongly advised against using wireless connections to complete quizzes or upload assignments. Wireless connections have been problematic in previous semesters with students losing all points due to upload failure. A hard-wired connection can be located at any UF computer lab on campus or any public library to submit graded assignments. TO REPEAT, wireless connections are problematic, and quizzes or assignment uploads may not be saved (without any warning) and therefore locating a hard-wired connection is recommended to submit any graded assignments.

**Exam day policy**: For both (in-person and online), please arrive with your ID five minutes early, if possible, to get seated and get your books/bags stored away so that the exam can start on the stated time. If you need to use the bathroom, please do so before the exam begins. Students are **not allowed to leave the Proctor-U session** during any of the **exams** and re-enter the classroom.

<u>Special Office hours (Gainesville)</u>: The instructor of the class will have **five** different two-hour sessions scheduled (from 3 to 5 pm). It is not mandatory but highly encouraged to attend. During these hours, the instructor will solve any doubt concerning any material of the class.

**TA Office Hours (Gainesville):** The TA will host weekly office hours. You are welcome to bring any doubt you have.

#### Review sessions and Lab Sessions:

- Gainesville: Dr. Luis will offer five review sessions (from 5 pm to 7 pm). It is not mandatory but highly encouraged to attend. During these hours, the instructor will discuss any doubts from the class and provide additional examples.
- In addition, Mr. Yefan Nian will host **three** reviews sessions. The TA of the class will host the **three computer lab sessions** at the scheduled provided below.
- **Plant City**: Dr. Luis will host weekly one-hour review sessions on Tuesdays from 1:30 to 2:30 pm. During these weekly meetings, it will be also included the computer lab sessions.

Online course evaluation: Student assessment of instruction is an important part of efforts to improve teaching and learning. As a motivation, there will be 10 extra bonus points for the final exam if 85% of the class completes it. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at <a href="https://evaluations.ufl.edu">https://evaluations.ufl.edu</a>. Evaluations are typically open for students to complete during the last two weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <a href="https://evaluations.ufl.edu/results">https://evaluations.ufl.edu/results</a>

## Timeline of the units covered in class - Fall 2019

The dates that each unit is expected to be covered, together with due dates for all assignments (pre-labs, quizzes, assignments, exams) and special office hours of Dr. Luis Peña-Lévano are presented in the timeline below:

Week#	Month	Days of the Week					
		M	T	W	R	F	
1	Aug	200	20	21	22	23	
2	1000	26	27	28	29	30	
3	Sep		3	4	5	6	
4		9	10	11	12	13	
5		16	17	18	19	20	
6		23	24	25	26	27	
7	Oct	30	1	2	3		
8		7	- 8	9	10	11	
9		14	15	16	1.7	18	
10		21	22	23	24	25	
11		28	29	30	31	1	
12	Nov	4	5	6	7	8	
13	2400045	- 11	12	13	14	15	
14		18	19	20	21	22	
15		25	26	27			
16		1.	2	3			
	Dec	9		1.4			

Unit	Description	Pre-lab	Quiz	Homework	Excel/Projects Review/O	fice TA Lab	TA Review	Exam
1 2	System of equations Functions	Aug 21 [W] Aug 26 [M]	Aug 21 [W] Aug 28 [W]	Aug 28 [W]				
3	Matrix Algebra	Aug 30 [F]	Sep 4 [W]	Sep 4 [W]	Sept 13 [F]	Sep 12 [R]		
4	Foundation of Derivatives	Sep 6 [F]	Sep 11 [W]	Sep 11 [W]	Sep 9 [N	The second second second		
	EXAM MIDTERM 1						- 555 - 1555-1556	Sep 16
5	Derivative applications	Sep 18 [W]	Sep 20 [F]	Sep 20 [F]			Sep 19 [R]	
6	Partial Derivatives	Sep 25 [W]	Sep 27 [F]	Oct 2 [W]	Sep 30 [1	M]	00 5985	
7	Special Matrices	Oct 7 [M]	Oct 9 [W]	Oct 11 [F]	Oct 11 [	F]		
	EXAM MIDTERM 2							Oct 14
8	Linear Programming	Oct 18 [F]	Oct 18 [F]	O-4-22 (tud				
9	LP model and sensivitity analysis	Oct 21 [M]	Oct 25 [F]	Oct 23 [W]	Oct 25 [F] Oct 21 [M]	M] Oct 24 [R]	Oct 24 [R]	
10	Integrals	Oct 30 [W]	Nov 1 [F]	Nov 6 [W]	2000 1000		Nov 5 [T]	
11	Comparative statics and programming	Nov 11 [M]	Nov 13 [W]	Nov 15 [F]	Nov 15 [	F]		
	EXAM MIDTERM 3	10000	0.72			30		Nov 25
12	Differential, probability and regression	Nov 20 [W]	Nov 22 [F]	Nov 22[F]	Nov 22 [F]	Nov 21 [R		
	Final Practices and Projects	***************************************		Dec 3 [W]*	Nov15 [F]			
	FINAL EXAM				**************************************			Dec 9
+	Optimal Control theory*	Nov 25 [M]	Dec 1 [M]	Dec 2 [T]				
	Syllabus	Special Quiz:	Aug 23 [F]	_				

s Special Quiz: Aug 23 [F]
\*\* This Unit is not Mandatory. This is an optional. If you complete it, this helps to replace the lowest scores of pre-lab, quiz and homework, respectively \*\*\*

\*The final practice provides special bonus points towards the final exam if 85% of the class fills out the class evaluation

#### **ADDITIONAL EXAMPLES AND PROBLEMS**

**Book Notation:** Mathematical methods for Business and Economics (MMBE)

Introduction to Mathematical Economics (IME)

**UNIT 01:** System of equations

MMBE: CH02 (Equations) & CH04 (System of equations)

**UNIT 02:** Foundations of Algebra and Arithmetic (Functions)

MMBE: CH01 (Review) & CH03 (Functions)

IME: CH01 (Review)

**UNIT 03:** Matrix Algebra

MMBE: CH05 (Linear Algebra) & CH06 (Matrix Application)

IME: CHIO (Fundamentals of Algebra) & CHII (Matrix inversion)

**UNIT 04:** Foundation of derivatives

MMBE: CH09 (Calculus) & CH11 (Exp & Log functions)

IME: CH04 (The rules of differentiation) & CH09 (Exp differentiation)

**UNIT 05:** Derivative applications

MMBE: CH10 (Uses of derivative)

IME: CH05 (Uses of derivatives)

**UNIT 06:** Partial derivatives

MMBE: CH13 (Multivariate calculus)

IME: CH05 (Calculus of multivariate functions) & CH06 (Application)

**UNIT 07:** Special matrices

IME: CH12 (Special determinants and matrices)

**UNIT 08:** Linear programming (LP)

MMBE: CH07 (LP using graphs)

**UNIT 09:** LP modeling and sensitivity analysis

MMBE: CH08 (Dual LP)

**UNIT 10:** Integral calculus

MMBE: CH12 (Integral calculus)

IME: CH13 (Indefinite integrals) & CH14 (Definite integrals)

**UNIT 11:** Comparative Statics & Concave Programming

IME: CHI5 (Comparative Statics)

**UNIT 12:** Differential, probability and regression *IME*: CH14 (Definite integrals) & CH15 (ODE)

**UNIT 13:** Optimal control Theory

IME: CH20 (Calculus of variation) & CH21 (Optimal control theory)

## **Accommodations and Services**

Students are responsible for all deadlines/critical dates and policies set forth by the University of Florida. Deadlines/critical dates are published on the University of Florida Office of the University Registrar's web-site, http://www.registrar.ufl.edu/. Current academic policies are presented in the University of Florida Undergraduate Catalog, https://catalog.ufl.edu/ugrad/current/Pages/home.aspx. Please familiarize yourself with this information.

Students Requesting Classroom Accommodation: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services, and mediating faculty-student disability related issues. 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 accommodations. Students with disabilities should follow this procedure as early as possible in the semester. This must be done at least 10 days prior to any accommodation is needed.

<u>UF Counseling Services</u>: The life of a college student can sometimes be overwhelming. Resources are available on-campus to help students manage personal issues or gain insight into career and academic goals. Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's various counseling resources. The following resources are available for all UF students:

- For general student affairs: Dean of Students Office, 392-1261 (after hours, please call 392-1111);
- For mental health consultations: Counseling & Wellness Center, 392-1575 (24/7 phone access);
- For students experiencing distress: U Matter, We Care, 294-2273, www.umatter.ufl.edu;
- For physical health consultations: Student Health Care Center, 392-1161;
- For victims of sexual assault: Office of Victim Services, 392-5648 (after hours, please call 392-1111);
- For career guidance: Career Resource Center, 392-1602, www.crc.ufl.edu.

**Software Use:** All faculty, staff, and students of the University of Florida 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.

Academic Honesty: In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students. In their words, the Honor Code Preamble: In adopting this honor code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community. Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of the University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic

dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior.

**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.

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

**Student complaints:** The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy.

- For a residential course, please read the following link:
   https://www.dso.ufl.edu/documents/UF Complaints policy.pdf
- For an online course, please follow this link: http://www.distance.ufl.edu/student-complaint-process

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

I wish everyone a rewarding and productive semester ©