

**Spring 2019 - Math 153 Mathematical Analysis for Business and Economics (3.0 units)****RLC106 Tuesday and Thursday 2:55 PM – 3:50 PM****Instructor:** John Cochrane**email:** johncochrane2002@hotmail.com**Cell phone:** 619-208-3056**Office hours:** Before or after class by appointment **Office location:** Gym lot, Trailer #2 / RS276 by 2/4/19**Text:** Introductory Mathematical Analysis for Business, Economics, and the Life and Social Sciences (13th Edition); by Ernest F. Haeussler, Richard S. Paul, Richard J. Wood**Other materials for the course:** A scientific calculator is recommended.**Important Dates:** **Exam #1: Tuesday, February 12****Exam #2: Tuesday, March 26****PLNU Mission**

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**To Teach ~ To Shape ~ To Send**

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

**Department Mission**

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The Mathematical, Information, and Computer Sciences department at Point Loma Nazarene University is committed to maintaining a curriculum that provides its students with the tools to be productive, the passion to continue learning, and Christian perspectives to provide a basis for making sound value judgments.

**Course Description:**

This course focuses on learning and using basic mathematical tools that are fundamental to business applications. Applications of these tools include: supply and demand, optimization, cost-benefit analysis, equilibrium (systems of equations), interest, and loan amortization.

**Prerequisite(s): MTH113 or equivalent****Learning Outcomes:**

Students will develop an ability to use mathematics to analyze supply and demand.

Students will be able to use mathematics to solve a variety of interest problems.

Students will develop an ability to use mathematics to solve equilibrium, optimization and cost-benefit problems

**Grading:** Grades for the course will be based on the following (percentage of the course grade):

Homework (20%),

Quizzes (10%)

Exams (40%)

Final exam (30%)

**Grading Scale:** Approximate minimal percentages required to obtain a given grade are:

Grades in percentages

	A	B	C	D	F
+		[87.5,90)	[77.5, 80)	[67.5, 70)	[0,60)
	[92.5,100]	[82.5,87.5)	[72.5, 77.5)	[62.5,67.5)	
-	[90, 92.5)	[80, 82.5)	[70, 72.5)	[60, 62.5)	

\*You will be able to view your grades in CANVAS.

**Homework (20%):** Homework will be assigned every class meeting. All homework assigned in a week will be due **at the start of class** on the next Tuesday. No late homework will be accepted except by prior arrangement or with a documented emergency. The object of the homework is to learn how to do the problems so I expect to see calculations on your homework using the terminology and methods of the class and not just an answer. Homework will be scored on a combination of completeness (with work shown) and correctness. A random selection (the same for all people) of the problems will be graded on any homework assignment. The two lowest homework scores will be dropped.

**Quizzes (10%):** Quizzes will be given in class throughout the semester. There are no make-up quizzes; however your lowest two quiz scores will be dropped.

**Exams and Final Exam (40% and 30% of the grade):** Exams and the Final Exam will include problems and questions over material assigned in the text, readings and handouts, as well as material presented in class.

No examination shall be missed without prior consent by me or a well-documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without prior consent or a well-documented emergency beyond your control. The examination schedule is included in the daily schedule.

**Please note: I do not intend to accept excuses such as miscommunication with parents, benefactors, sport team sponsors and/or travel agents.**

**Please note: The Final Exam is COMPREHENSIVE.**

**April 30 (Monday) 1:30-4**

**Attendance:** Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See [Attendance Policy](#) in the Undergraduate Academic Catalog.

**Class Enrollment:**

It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

**Academic Accommodations:**

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. ([DRC@pointloma.edu](mailto:DRC@pointloma.edu) or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

**Academic Honesty:**

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [the catalog](#) for definitions of kinds of academic dishonesty and for further policy information.

**Final Exam: Date and Time**

The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in the course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

**Copyright Protected Materials:**

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

**Credit Hour:**

In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for a 3.0 unit class delivered over 15 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

**Side Note:** Turn off any cell phone, pager or things that make noise while you are in class. Also, do not text or work on other classes while in class -to do so is disrespectful to your classmates and me. You may be asked to leave the class for such behavior, resulting in an absence.

**General Advice:**

You learn mathematics by doing it yourself. You should expect to spend approximately two hours outside of class for every one hour in class working on homework and going over concepts. When doing homework, please note it is normal to not be able to do every problem correct on the first attempt. Do not be discouraged, instead seek help.

Please note this schedule is tentative. Any changes will be announced.

Week	Tuesday	Thursday	
1 1/8- 1/12		1/10 Thursday (First Day of class Introduction) Review: Chapter 0 1.1 Applications of Equations	
2 1/15- 1/19	1/15 1.2 Linear Inequalities 1.3: Applications of Inequalities	1/17 1.4 Absolute Value 1.5 Summation Notation	
3 1/22- 1/26	1/22 1.6 Sequences	1/24 2.1: Functions 2.2 Special Functions	
4 1/29- 2/2	1/29 2.3: Combinations of functions 2.4: Inverse Functions	1/31 2.5: Graphs in Rectangular coordinates 2.8 Functions of Several Variables	
5 2/5- 2/9	2/5 3.1: Lines 3.2: Applications and Linear Functions	2/7 Review 3.3: Quadratic Functions	
6 2/12- 2/16	2/12 <b>Exam #1</b> <b>(chapters 1, 2, and 3.1-3.2)</b>	2/14 3.4: Systems of Linear Functions	
7 2/19- 2/23	2/19 3.5: Nonlinear systems	2/21 3.6: Applications of systems of equations	
8 2/26- 3/2	2/26 4.1: Exponential Functions 4.2: Logarithmic functions	2/28 4.3: Properties of logarithms	
Spring Break 3-5 to 3-9			
9 3/12- 3/16	3/12 4.4: Logarithmic and Exponential functions 5.1: Compound Interest	3/14 5.2: Present Value 5.3: Interest compounded continuously	
10 3/19- 3/23	3/19 5.4: Annuities 5.5: Amortization of Loans	3/21 5.6: Perpetuities Review	

11 3/26- 3/30	<b>Exam #2</b> <b>(chapters 3.3-3.6, 4, 5)</b>	*6.1: Matrices *6.2: Matrix Addition and Scalar Multiplication	
12 4/2- 4/6	4/2 Easter Break No classes	4/4 *6.1: Matrices *6.2: Matrix Addition and Scalar Multiplication	
13 4/9- 4/13	4/9 *6.3: Matrix multiplication	4/11 6.4 & 6.5: Solving Systems by Reducing matrices	
14 4/16- 4/20	4/16 7.1: Linear Inequalities in two variables	4/18 7.2: Linear Programming 7.3 Multiple Optimum Solutions	
15 4/23- 4/27	4/23 7.4 Simplex method 7.7 Minimization	4/25 <b>Review</b>	
16 Finals Week	<b>4/30</b> <b>Final Exam: 1:30 to 4</b>		