

Syllabus for Real Analysis I

	Mathematics, Information, and Computer Sciences College of Natural and Social Sciences MTH4024-1 Real Analysis 4 Units Pre – requisites: MTH2033, MTH3012 and Junior standing
	Fall 2023: August 28 – December 15

Meetings: Monday, Wednesday, Friday	Instructor: Jesús Jiménez-Reyes, Professor of Mathematics	
Meeting Time: 8:30 am – 9:35 am	Phone: 619-849-2634	
Meeting location: RS 365	Email: jjimenez@pointloma.edu	
Final Exam December 13 th (Wed) 7:30 – 10:00 am	Office hours:	WF 11:00 am – 12:00 pm, 1:30 pm – 3:00 pm
	RS234 or Zoom	Thu 10:00 am – 12:00 pm

PLNU MISSION: 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

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

Real numbers, topology of Euclidean n -space, continuity, differentiation and integration theory.

PROGRAM AND COURSE LEARNING OUTCOMES

- Students will be able to demonstrate facility with analytical concepts.
- Students will be able to write proofs.
- Students will be able to speak about their work with precision, clarity and organization.
- Students will collaborate effectively in teams.
- Students will be able to understand and create arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats.

REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

Textbook: Analysis with an introduction to proof. Fifth Edition.

Author: Steven R. Lay

Publisher: PEARSON. ISBN 978-0-321-74747-1

COURSE CREDIT HOUR INFORMATION

In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 4-unit class delivered over 15 weeks. Specific details about how the class meets the credit hour is provided below.

Class Meetings	60.00
Reading Text	80.00
Midterms	12.00

Final Exam	6.00
TOTAL	158.00

ASSESSMENT AND GRADING

The grade components are attendance, written homework, partial exams, and the final examination.

GRADING SCALE

A passing grade requires getting at least 60% in one of the three tests or on the final exam. Grades are based on the number of points accumulated throughout the course. Approximate minimal percentages required to obtain a given grade are:

Grading Scale in Percentages				
	A	B	C	D
+		(87.5, 90]	(77.5, 80]	(67.5, 70]
	(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]

GRADING DISTRIBUTION

Grade Distribution	
Three exams a 16% each	48%
Final Exam	25%
Written Homework	25%
Attendance	2%
Total	100%

FINAL EXAMINATION POLICY (December 13th, Wednesday, 7:30 – 10:00 am)

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Class Schedules site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted. The final exam is a comprehensive exam.

INCOMPLETE AND LATE ASSIGNMENTS

- All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Late work need not be accepted. Work accepted late may be assessed a penalty. Make-up tests will be given only by prior arrangement with the instructor for reasons of documented emergency.
- Incomplete grade:** Incompletes will only be assigned in extremely unusual circumstances. You may request a grade of I (incomplete) only if you are having a passing grade and at least 70% of the course work is completed.

SPIRITUAL CARE

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If students have questions, a desire to meet with the chaplain or have prayer requests you can contact the [Office of Spiritual Life and Formation](#)

STATE AUTHORIZATION

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after

admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

PLNU COPYRIGHT POLICY

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.

PLNU ACADEMIC HONESTY POLICY

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 [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course and/or if they do not wish to utilize some or all of the elements of their AP in that course.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC.

SEXUAL MISCONDUCT AND DISCRIMINATION

Point Loma Nazarene University faculty are committed to helping create a safe learning environment for all students. If you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that help and support are available through the Title IX Office at <http://pointloma.edu/Title-IX>. Please be aware that under Title IX of the Education Amendments of 1972, it is required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at <mailto:counselingservices@pointloma.edu> or find a list of campus pastors at <http://pointloma.edu/Title-IX>.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an F grade. See the Undergraduate Academic Catalog [Class Attendance](#).

In some courses, a portion of the credit hour content will be delivered **asynchronously** and attendance will be determined by submitting the assignments by the posted due dates. See [Academic Policies](#) in the

Undergraduate Academic Catalog. If absences exceed these limits but are due to university excused health issues, an exception will be granted.

Asynchronous Attendance/Participation Definition

A day of attendance in asynchronous content is determined as contributing a substantive note, assignment, discussion, or submission by the posted due date. Failure to meet these standards will result in an absence for that day. Instructors will determine how many asynchronous attendance days are required each week.

COURSE MODALITY DEFINITIONS

1. **In – Person:** Course meetings are face-to-face with no more than 25% online delivery.
2. **Online:** Coursework is completed 100% online and asynchronously.
3. **Online Synchronous:** Coursework is completed 100% online with required.
4. **Hybrid:** Courses that meet face-to-face with required online components.

USE OF TECHNOLOGY

In order to be successful in the online or hybrid environment, you'll need to meet the minimum technology and system requirements; please refer to the [Technology and System Requirements information](#). Additionally, students are required to have headphone speakers, microphone, or webcams compatible with their computer available to use. Please note that any course with online proctored exams require a computer with a camera (tablets are not compatible) to complete exams online.

Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

ASSIGNMENTS AT – A – GLANCE

These assignments are to be written up on paper or a PDF uploaded to CANVAS on or before the due date.

Comments on assigned homework:

1. This is the minimum amount of homework that is required but you may need to do several odd numbered problems to make sure you get the answer in the textbook.
2. A homework assignment is late if it is not received at the start of class on the due date. No late homework will be accepted except by prior arrangement or with a documented emergency.
3. Please be sure that your homework is stapled together and the problems are in order.
4. Homework will be scored on a combination of completeness and correctness. All work necessary to complete a problem must be shown to earn credit.
5. Start working on your homework early. These problems are difficult and meant to be done a little at a time over the course of a few days.
6. When doing homework, please note it is normal to not be able to do every problem correctly on the first attempt. Do not be discouraged, instead seek help.

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.

DAILY SCHEDULE

Week	Date	Day	Class	Section	Problems	Due
1	8/28/23	Mon	1.1			
1	8/29/23	Tue				
1	8/30/23	Wed	1.2	1.1	3, 6, 9, 12	8/30/23
1	8/31/23	Thu				
1	9/1/23	Fri	1.3	1.2	3, 5, 8, 13 - 21	9/1/23
2	9/4/23	Mon		1.3	3, 4, 5, 7	9/6/23
2	9/5/23	Tue				
2	9/6/23	Wed	1.4	1.4	1, 2, 10, 21, 29	9/6/23
2	9/7/23	Thu				
2	9/8/23	Fri	2.1	Proofs		
3	9/11/23	Mon	2.2	2.1	3, 4, 6, 26	9/11/23
3	9/12/23	Tue				
3	9/13/23	Wed	2.2, 2.3	2.2	3, 4, 5, 6, 8, 11	9/13/23
3	9/14/23	Thu				
3	9/15/23	Fri	2.3, 2.4	2.3	1, 2, 9, 22, 32, 34	9/15/23
4	9/18/23	Mon	3.1	2.4	4, 17	9/18/23
4	9/19/23	Tue				
4	9/20/23	Wed	3.2	3.1	3, 4, 6, 7, 8, 24, 27	9/20/23
4	9/21/23	Thu				
4	9/22/23	Fri	3.3	3.2	4, 6, 7,	9/22/23
5	9/25/23	Mon	3.4			
5	9/26/23	Tue				
5	9/27/23	Wed		Exam 1		
5	9/28/23	Thu				
5	9/29/23	Fri	3.5	3.3	3, 7, 9, 12,	9/29/23
6	10/2/23	Mon	4.1	3.4	3, 4, 5, 6, 7, 8, 15, 21, 22	10/2/23
6	10/3/23	Tue				
6	10/4/23	Wed	4.2	3.5	3, 4, 8, 11	10/4/23
6	10/5/23	Thu				
6	10/6/23	Fri	4.3	4.1	4, 6(b, c, d), 7, 10, 12, 16	10/6/23
7	10/9/23	Mon	5.1	4.2	3, 4, 5(b, d, e, f, g), 6, 8, 17, 18	10/9/23
7	10/10/23	Tue				
7	10/11/23	Wed	5.2	4.3	4, 10, 14	10/11/23
7	10/12/23	Thu				
7	10/13/23	Fri	5.3	4.4	1, 2, 5	10/13/23
8	10/16/23	Mon	5.4	5.1	1, 2, 4, 6(c), 16, 18	10/16/23
8	10/17/23	Tue				
8	10/18/23	Wed		Exam 2		
8	10/19/23	Thu				
8	10/20/23	Fri	6.1	5.2	1, 2, 6, 10, 11, 15	10/20/23
9	10/23/23	Mon	6.2	5.3	3, 13	10/23/23
9	10/24/23	Tue				
9	10/25/23	Wed	6.3	5.4	3, 4(a, b), 6	10/25/23
9	10/26/23	Thu				
9	10/27/23	Fri		No Class		
10	10/30/23	Mon	6.4	6.1	1, 2, 3, 6, 8, 15(a)	10/30/23

