POINT LOMA NAZARENE UNIVERSITY	**Department of Mathematical, Computer, and Information Sciences** MTH 1064 Calculus I 3 Units
Fall 2023 August 28th - December 15th	

Section:	**Instructor:**	**Email:**	**Phone:**	**Office Hours:**	**Final Exam**
Sec 1: MWF, 8:30-9:25, Rohr Science 295	Professor Greg Crow, Ph.D.	gcrow@pointloma.edu	619.849.2604	Rohr Science 252 Hours Fall 2023.docx Posted in Canvas	Wednesday 13-Dec-2023 from 10:30 AM -1:00 PM in the classroom

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 is an expression of faith. Being of Wesleyan heritage, we strive 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.

Foundational Explorations Mission

PLNU provides a foundational course of study in the liberal arts informed by the life, death, and resurrection of Jesus Christ. In keeping with the Wesleyan tradition, the curriculum equips students with a broad range of knowledge and skills within and across disciplines to enrich major study, lifelong learning, and vocational service as Christ-like participants in the world's diverse societies and culture. (Link to FE (formerly GE) courses and corresponding FELO's: https://assessment.pointloma.edu/academic-assessment/general-education/assessment-plan/)

FOUNDATIONAL EXPLORATIONS LEARNING OUTCOMES

1. Students will be able to solve problems that are quantitative in nature.
2. Students will be able to formulate a mathematical model from a verbal description of a problem.
3. Students will be able to solve non-routine problems using logic and quantitative techniques.
4. Students will be able to construct solutions to problems using computational techniques

COURSE DESCRIPTION

Calculus of the elementary functions of one variable. Limits, continuity, derivatives, methods of integration and applications.

Prerequisite: Mathematics 1033 (or equivalent). Corequiste: Mathematics 1064L

COURSE LEARNING OUTCOMES

1. Students will be able to demonstrate facility with analytical concepts.
2. Students will be able to demonstrate facility with algebraic structures.
3. Students will be able to use technology to solve problems.
4. Students will be able to speak about their work with precision, clarity, and organization.
5. Students will collaborate effectively in teams.
6. Students will be able to identify, locate, evaluate, and effectively and responsible use and cite information for the task at hand.
7. Students will be able to gather relevant information, examine information and form a conclusion based on that information.
8. 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

1. Textbook: Calculus, 9th Edition by Stewart (ISBN: 9781337624183 for hardback, but e-Text of the same book is acceptable)
2. A non-graphing scientific calculator for use on exams and in the classroom (with at least trigonometric, exponential, and logarithmic keys)

ASSESSMENT AND GRADING

Graded Components

- **Weekly Classwork:** Attendance at each class is required. In these class meetings, we will work have lectures, work on activities and problems. Some classwork may be graded, and some you will get full credit just for attempting.
- **Written Homework**: The homework is designed to allow you to grasp the concepts of Statistics; it is not an end in itself. The homework problems will be taken from the Textbook and hand written on paper. There may also be other activities that are completed as homework. Each homework set will be due on Wednesday of the next week from when it is assigned. Please see the schedule below. Late homework will not be accepted without prior consent or a well-documented emergency beyond your control. Up to a maximum of one homework assignment will be accepted up to 3 days late provided that consent is received from the professor before it is due. Written homework that is submitted late without prior consent will be recorded with a score of zero. The lowest homework score will be dropped prior to computing the final course grade.

In the event that our in person class is prohibited from meeting in person in a given week, please scan or photograph the pages, and upload the file to Canvas as a .pdf, .jpg, .jpeg, .png, or .docx (but not Google Docs). If you take a photograph with your phone, then please turn off the setting for *Live Photos* or *Motion Photo* prior to taking the picture. If you use Google Docs, please export to a .pdf and upload that file.

- **Examinations and the Final Examination**. Examinations and the Final Examination 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 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. This instructor does not intend to accept excuses such as poor communication with parents, benefactors, surf team sponsors and/or travel agents.

Final Exam: Scheduled on Wednesday 13-Dec-2023 from 10:30 AM -1:00 PM in the classroom. 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.

Grading Distribution	**Percent**
Three Examinations at 15% each	45
Final Exam	30
Written Homework	20
Classwork	5
Total	**100**

Grading Scale

Grades are based on the number of points accumulated throughout the course with the following exception. A student must pass at least one of Examination 1, Examination 2, Examination 3 or the Final Examination in order to pass the class. That is, a score of 60% must be achieved on one of the Examinations, or else the final grade will be an F regardless of all other point totals. Approximate minimal percentages required to obtain a given grade are

Standard Grade Scale Based on Percentages					
	A	**B**	**C**	**D**	**F**
+		[87.5-90.0)	[77.5-80.0)	[67.5-70.0)	
	[92.5 -100]	[82.5-87.5)	[72.5-77.5)	[62.5 -67.5)	[0.0-60.0)
_	[90.0-92.5)	[80.0-82.5)	[70.0-72.5)	[60.0-62.5)	

INCOMPLETES 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. We understand that life happens, if you contact your instructor prior to the due date of the assignment you may request one extension as indicated above. Incompletes will only be assigned in extremely unusual circumstances.

COURSE 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 unit class delivered over 15 weeks. It is anticipated that students will spend a minimum of 37.5 participation hours per credit hour on their coursework.

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.

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.

ARTIFICIAL INTELLIGENCE (AI) POLICY

You are allowed to use Artificial Intelligence (AI) tools (e.g, ChatGPT, iA Writer, Marmot, Botowski) to generate ideas, but you are not allowed to use AI tools to generate content (text, video, audio, images) that will end up in any work submitted to be graded for this course. If you have any doubts about using AI, please gain permission from the instructor.

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 POLICY

In support of a safe learning environment, 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 accommodations and resources are available through the Title IX Office at pointloma.edu/Title-IX. Please be aware that under Title IX of the Education Amendments of 1972, faculty and staff are 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 counselingservices@pointloma.edu or find a list of campus pastors at pointloma.edu/title-ix.

PLNU ATTENDANCE AND PARTICIPATION POLICY

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 withdrawal date or, after that date, receive the appropriate grade for their work and participation. See Academic Policies for further information about class attendance.

COURSE MODALITY DEFINITIONS:

1.
    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 weekly online class meetings.
    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 requires 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.

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.

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 Student Life and Formation.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
August	27	28 Welcome and Introduction 1.1 Four Ways to Represent a Function 1.2 Mathematical Models: A Catalog of Essential Functions	29	30 1.2 Mathematical Models: A Catalog of Essential Functions 1.3 New Functions from Old Functions	31	1 1.4 The Tangent and Velocity Problems 1.5 The Limit of a Function	2
September	3	4 **Labor Day**	5	6 1.5 The Limit of a Function 1.6 Calculating Limits Using the Limit Laws	7	8 1.7 The Precise Definition of a Limit	9
	10	11 1.8 Continuity	12	13 2.1 Derivatives and Rates of Change 2.2 The Derivative as a Function	14	15 Department Chapel 2.3. Differentiation Formulas	16
	17	18 2.4. Derivatives of Trigonometric Functions	19	20 Catch up and **Review for Exam I**	21	22 **Exam I**	23
	24	25 2.5. The Chain Rule	26	27 2.6. Implicit Differentiation	28	29 2.7. Rates of Change in the Sciences 2.8. Related Rates	30
October	1	2 2.9. Linear Approximations and Differentials	3	4 3.1. Maximum and Minimum Values	5	6 No Class	7
	8	9 3.2. The Mean Value Theorem 3.3. Derivatives and the Shape of a Graph	10	11 3.4. Limits at Infinity; Horizontal Asymptotes 3.5. Summary of Curve Sketching	12	13 Advising Chapel 3.5. Summary of Curve Sketching 3.6. Graphing with Calculus and Technology	14
	15	16 Catch up and **Review for Exam II**	17	18 **Exam II**	19	20 Fall Break	21
	22	23 3.7 Optimization Problems **Spiritual**	24 _____	25 3.8. Newton's Method **Renewal**	26 _____	27 3.9. Antiderivatives **Week**	28
	29	30 4.1. The Area and Distance Problems	31	1 4.2. The Definite Integral 4.3. The Fundamental Theorem of Calculus	2	3 Last Withdrawal Day 4.3. The Fundamental Theorem of Calculus 4.4. Indefinite Integrals & Net Change Theorem	4
November	5	6 4.4. Indefinite Integrals & Net Change Theorem	7	8 4.5. The Substitution Rule	9	10 4.5. The Substitution Rule	11
	12	13 5.1. Areas between Curves	14	15 5.2. Volumes 5.3. Volumes by Cylindrical Shells	16	17 5.4. Work 5.5. Average Value of a Function	18
	19	20 **Exam III**	21	22 Thanksgiving Recess	23 **Thanksgiving Day**	24 Thanksgiving Recess	25
	26	27 6.1. Inverse Functions and Their Derivatives 6.2. Exponential Functions and Their Derivatives	28	29 6.2. Exponential Functions and Their Derivatives 6.3. Logarithmic Functions	30	1 6.4. Derivatives of Logarithmic Functions 6.5. Exponential Growth and Decay	2
December	3	4 6.6. Inverse Trigonometric Functions 6.7. Hyperbolic Functions	5	6 6.8. Indeterminate Forms and L'Hospital's Rule	7	8 **Review for Final Exam**	9
	10	11	12 **Lab** **Final** **10:30AM –1:00**	13 **Final Exam** **10:30 AM – 1:00 PM**	14	15	16