

	<p><b>MICS/Point Loma Nazarene University</b></p> <p><b>MTH 1044-1: Calculus with Applications</b></p> <p><b>4.0 Units; pre-requisite MTH 1023, 1033 or equivalent</b></p>
<p>Spring 2023   MWF 8:30-9:35</p>	

Meetings: Monday, Wednesday & Friday: 8:30-9:35 am	Professor: Dr. Catherine Crockett
Location: RS 295	Office & Office phone: RS 222 & 619.849.2723
Required textbook: Calculus & its Applications. Goldstein, Lay, Schneider, Asmar. Pearson, 14 <sup>th</sup> Edition.	Email: catherinecrockett@pointloma.edu
Exam dates: Exam 1: February 6 (Monday) Exam 2: March 15 (Wednesday) Exam 3: April 15 (Friday) Final Exam: May 1 (Monday), 7:30-10:00	Office hours: MF 1- 3, TTH 10- 11:30, W 1- 2:30 or by appointment (email me to set up time)
More course information is in Canvas	

### 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.

### MICS 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

Differential and integral calculus of the elementary functions of one variable. Limits, continuity, derivatives, integrals and applications.

### COURSE LEARNING OUTCOMES

- Students will be able to formulate a mathematical model from a verbal description of a problem.
- Students will be able to solve non-routine problems using logic and quantitative techniques.

- Students will be able to construct solutions to problems using computational techniques.

## FOUNDATIONAL EXPLORATIONS MISSION AND LEARNING OUTCOMES

This is a PLNU Foundational Explorations course (a general education course).

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 cultures.

## FOUNDATIONAL EXPLORATIONS LEARNING OUTCOMES

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

## REQUIRED MATERIALS

- **Text:** Calculus & its Applications. Goldstein, Lay, Schneider, Asmar. Pearson, 14<sup>th</sup> Edition.
- Calculator: A scientific calculator (including Ln and Cos in the \$10 to \$20 range).
- A platypus, house trained and able to walk on a lead preferred.

## FINANCIAL LITERACY

A portion of PLNU's mathematics general education is focused on financial literacy. Part of this class will examine issues related to borrowing and saving money, budgeting and the use of credit cards using some of the concepts introduced in calculus.

## 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. It is anticipated that students will spend a minimum of 37.5 participation hours per credit hour on their coursework. For this course, students will spend an estimated 150 total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules.

## ASSESSMENT AND GRADING

### Graded Components

**Homework:** Homework will be assigned every class meeting. All homework assigned in a week will be due on Wednesday of the following week. **No late homework will be accepted except by prior arrangement (with me) or with a documented emergency.** The object of the homework is to learn how to do the problems so there should be calculations on your homework using the terminology and methods of the class and not just an answer.

### Comments on homework:

- 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.

- 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.
- Please be sure that your homework is stapled together, and the problems are in order.
- Homework will be scored on a combination of completeness and correctness. **All work necessary to complete a problem must be shown to earn credit.**
- 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.
- 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.

**Quizzes:** There will be weekly quizzes. Quiz questions will come from the readings and videos assigned before each class session. No late quizzes are accepted except by prior arrangement (with me) or with a documented emergency. The object of the quizzes is to assess what you learned from the videos and readings and review. The two lowest quiz scores will be dropped.

**Collaborative Work:** Each week there will be assignments to be completed in small groups. There is almost a century of research showing that academic achievement, productivity, and self-esteem improve dramatically when students work together in groups. This method emphasizes teamwork, cooperation, and support by others, rather than isolation and competition in learning.

**Exams:** There are three exams. The exams will include problems and questions over material assigned in the text, readings, and handouts, as well as material presented in class. If you do not take an exam, you will receive a zero for it. Late exams may be taken only by prior arrangement with me or a well-documented emergency beyond your control. The examination schedule is included in the daily schedule. I do not intend to accept excuses such as poor communication with parents, benefactors, sport team sponsors and/or travel agents.

**THE FINAL EXAM IS A COMPREHENSIVE EXAMINATION. (May 1, Monday, 7:30 – 10:00 am)**

Successful completion of this class requires taking the final examination on its scheduled day.

The final exam date, time and place 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.

Grading Distribution	Percent
Three Examinations at 15% each	45
Final Exam	25
Homework	15
Quizzes	10
Collaborative Work	5
Total	100

**Grading Scale:** Grades will be based on the following scale:

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)

## 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.

## 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. Incompletes will only be assigned in extremely unusual circumstances.

## 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](mailto: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.

## **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 drop date or, after that date, receive the appropriate grade for their work and participation. See the Undergraduate Academic Catalog [Class Attendance](#).

## **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.

## **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](#)

## **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>.

## **ACADEMIC BEHAVIOR POLICY**

Both faculty and students at Point Loma Nazarene University have the right to expect a safe and ordered environment for learning. Any student behavior that is disruptive or threatening is a serious affront to Point Loma Nazarene University as a learning community. Students who fail to adhere to appropriate academic behavioral standards may be subject to discipline. Although faculty members communicate general student expectations in their syllabi and disruptive student conduct is already addressed in the Undergraduate Student Handbook, the purpose of this policy is to clarify what constitutes disruptive behavior in the academic setting and what actions faculty and relevant administrative offices may take in response to such disruptive student behavior.

“Disruption,” as applied to the academic setting, means classroom, instructor or classmate-related student behavior that a reasonable faculty member would view as interfering with or deviating from normal classroom, class-related, or other faculty-student activity (advising, co-curricular involvement, etc.). Faculty members are encouraged to communicate positive behavior expectations at the first-class session and to include them in course syllabi. Examples of disruptive classroom or class-related behavior include, but are not limited to:

- persistent speaking without being recognized or interrupting the instructor or other speakers;
- overt inattentiveness (sleeping or reading the newspaper in class);
- inordinate or inappropriate demands for instructor or classroom time or attention;
- unauthorized use of cell phone or computer;
- behavior that distracts the class from the subject matter or discussion;
- unwanted contact with a classmate in person, via social media or other means;
- inappropriate public displays of affection;
- refusal to comply with reasonable instructor direction; and/or
- invasion of personal space, physical threats, harassing behavior or personal insults.

The above types of behavior are prohibited in the classroom, course-related off-campus activities and class-related interactions between students and faculty members or academic administrators. Incidents which involve both academic and non-academic behavior may result in responses coordinated by the Vice Provost for Academic Administration (VPAA) and the Vice President for Student Development or the Dean of Students.

Civil and polite expression of disagreement with the course instructor, during times when the instructor permits discussion, is not in itself disruptive behavior and is not prohibited.

All students, including students with disabilities, are required to comply with this Academic Behavior Policy and related policies in their respective Student Handbooks, Catalogs and/or faculty syllabi. Students with disabilities, however, may be entitled to receive academic adjustments, modifications or auxiliary aids and services as described below under the

[Academic Accommodations](#) section.

**GENERAL ADVICE:** The key to success in this class is to attend lectures regularly and do your homework. 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 – again- THIS IS NORMAL. Do not be discouraged, instead seek help.

**SOURCES OF HELP:**

1. Me. If you have questions, ask me. See office hours.
2. FREE TUTORING- Math Learning Center-hours are posted on the door.
3. Other classmates. Form study groups! Work together!

**Tentative Schedule and Homework assignment:** While topic order may change — the test dates will not.

Week	M	W	F
1	1/9 (This class is on Tuesday 1/10) Introduction	1/11 Chapter 0: Review	1/13 1.1: Slope of a line 1.2: Slope of a curve at a point

	Chapter 0: Review		
2	1/16 <b>MLK Day</b> <b>No class</b>	1/18 1.3: The derivative 1.4: Limits & Derivatives  Homework #1	1/20 1.5: Differentiability & continuity 1.6: Some rules for differentiation
3	1/23 1.7: More about derivatives 1.8: Derivatives as a rate of change	1/25 2.1: Describing Graphs of functions Homework #2	1/27 2.2: First & Second Derivative Rules 2.3: First & Second Derivative tests
4	1/30 2.5: Optimization Problems	2/1 2.6: Further Optimization Problems Homework #3	2/3 <b>Review</b>
5	2/6 <b>Exam #1 (Chapter 1-2.6)</b>	2/8 3.1: The Product & Quotient Rules Homework #4	2/10 3.2: The Chain Rule
6	2/13 3.3: Implicit differentiation & related rates	2/15 3.3: Implicit differentiation & related rates Homework #5	2/17 4.1: Exponential functions 4.2: $e^x$
7	2/20 4.3: Differentiation of $e^x$	2/22 4.4: $\ln x$ Homework #6	2/23 4.5: The derivative of $\ln x$
8	2/27 5.1: Exponential growth/ decay	3/1 5.2: Compound Interest Homework #7	3/3 5.4: Further Exponential Models
Spring Break 3/6 to 3/10			
9	3/13 <b>Review</b>	3/15 <b>Exam #2 (3.1 - 5.2)</b> Homework #8	3/17 6.1: Antidifferentiation
10	3/20 6.2: The Definite Integral and the Net Change of a Function	3/22 6.3: Definite Integrals and FTC	3/24 6.4: Area in $xy$ - plane
11	3/27 8.1 & 8.2: Review of trig. functions	3/29 8.3: Differentiation & integration of sine & cosine Homework #9	3/31 8.4: The Tangent & other Trig functions
12	4/3 9.1: Integration by Substitution	4/5 9.2: Integration by Parts Homework #10	4/7 <b>Easter Break</b> <b>No class</b>
13	4/10 <b>Easter Break</b> <b>No Class</b>	4/12 <b>Review</b>	4/15 <b>Exam #3 (Chapter 5.1-9.2)</b> <b>Homework #12</b>

14	4/17 9.3: Evaluation of Definite Integrals	4/19 9.4: Approximation of Definite integrals	4/21 11.1: Taylor Polynomials
15	4/24 11.2: The Newton- Raphson Algorithm	4/26 Financial Math Homework #13	4/28 <b>Review</b>
Final Exam Week	<b>5/1</b> <b>Final Exam 7:30-10:00 a.m.</b>	5/3	5/5