

MTH 144-2 Calculus with Applications
 Class Time MWF 11:00 am – 12:05 pm
 Location RLC 108

Instructor Dr. Jesús Jiménez
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 Office Hours T 9:30-12:00, 1:30-4:00 or by appointment

Textbook: Calculus & its Applications. Goldstein, Lay, Schneider, Asmar.

Prerequisite: MTH 123 or 133 (or equivalent).

Important Dates

| | |
|------------|--------|
| Exam 1 | Feb 6 |
| Exam 2 | Feb 29 |
| Exam 3 | Apr 16 |
| Final exam | May 4 |

Course Description:

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

General Education:

This course is one of the components of the General Education Program at Point Loma Nazarene University, under the category of *Developing Cognitive Abilities*. By including this course in a common educational experience for undergraduates, the faculty supports the pursuit of personal awareness and skill development, focusing on the analytical, communicative, and quantitative skills necessary for successful living in society.

General Education Learning Outcomes for this Course:

- A. Students will demonstrate effective written and oral communication skills, both as individuals and in groups.
 1. Students will be able to formulate a mathematical model from a verbal description of a problem.
- B. Students will use quantitative analysis, qualitative analysis, and logic skills to address questions and solve problems.
 2. Students will be able to solve non-routine problems using logic and quantitative techniques.
 3. Students will be able to construct solutions to problems using computational techniques.

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.

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 in which a student is registered is considered essential to optimum academic achievement. Therefore, regular attendance and participation in each course are minimal requirements to be met. There are no allowed or excused absences except when absences are necessitated by certain university-sponsored activities and are approved in writing by the Provost. Whenever the number of accumulated absences in a class, for any cause, exceeds ten percent of the total number of class meetings, the faculty member has the option of filing a written report to the Vice Provost for Academic Administration which may result in de-enrollment, pending any resolution of the excessive absences between the faculty member and the student...If the date of de-enrollment is past the last date to withdraw from a class, the student will be assigned a grade of W or WF (no grade). There are no refunds for courses where a de-enrollment was processed." (see catalog for full text)

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 academic standards for completion of this course as established by the instructor, students with disabilities may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation with the Disability Resource Center (DRC), located in the Bond Academic Center. Once the student files documentation, the Disability Resource Center will contact the student's instructors and provide written recommendations for reasonable and appropriate accommodations to meet the individual needs of the student. This policy assists the university in its commitment to full compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities (ADA) Act of 1990, and ADA Amendments Act of 2008, all of which prohibit discrimination against students with disabilities and guarantees all qualified students equal access to and benefits of PLNU programs and activities.

Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

Academic Honesty:

The Point Loma Nazarene University community holds the highest standards of honesty and integrity in all aspects of university life. Academic honesty and integrity are strong values among faculty and students alike. Any violation of the university's commitment is a serious affront to the very nature of Point Loma's mission and purpose.

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. Such acts include plagiarism, copying of class assignments, and copying or other fraudulent behavior on examinations. For more details on PLNU's policy go

to: <http://www.pointloma.edu/experience/academics/catalogs/undergraduate-catalog/point-loma-education/academic-policies>

A student who is caught cheating on any item of work will receive a zero on that item and may receive an "F" for the semester. See the PLNU Catalog for a further explanation of the PLNU procedures for academic dishonesty.

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. 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 change the exam date and time for that particular student.

Grading: Grades for the course will be based on homework (25%), three exams (15% each; total of 45%), and a final exam (30%).

Homework (25%): Homework will be assigned every class meeting. 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; however the two lowest homework scores will be dropped. 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. A random selection (the same for all people) of the problems will be graded on any homework assignment.

Tests and Final Exam (15% each and 30%): Tests 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

Tentative Schedule: While topic order may change- the test dates will not.

| Week | M | T | W | R | F |
|----------------------------------|-------------------------------------------------------------|------|--------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------------|
| 1 | 1/9 Review Chapter 0 Financial math | 1/10 | 1/11 1.1: Slope of a line 1.2: Slope of a curve at a point | 1/12 | 1/13 1.4: Limits & Derivatives 1.3: The derivative |
| 2 | 1/16 MLK day No classes | 1/17 | 1/18 1.5: Differentiability & continuity 1.6: Some rules for differentiation | 1/19 | 1/20 1.7: More about derivatives 1.8: Derivatives as a rate of change |
| 3 | 1/23 2.1: Describing Graphs of functions | 1/24 | 1/25 2.2: First & Second Derivative Rules 2.3: First & second derivative tests | 1/26 | 1/26 2.5: Optimization Problems 2.6: Further Optimization |
| 4 | 1/30 2.6: Further Optimization Financial Math | 1/31 | 2/1 2.7: Financial Math | 2/2 | 2/3 Review |
| 5 | 2/6 Exam #1 (Chapter 0-2) | 2/7 | 2/8 3.1: The Product & Quotient Rules | 2/9 | 2/10 3.2: The Chain Rule |
| 6 | 2/13 3.3: Implicit differentiation & related rates | 2/14 | 2/15 4.1: Exponential functions 4.2: e^x | 2/16 | 2/17 4.3: Differentiation of e^x 4.4: $\ln x$ |
| 7 | 2/20 4.4: $\ln x$ 4.5: The derivative of $\ln x$ | 2/21 | 2/22 5.1: exponential growth/ decay 5.2: Compound Interest | 2/23 | 2/24 5.2: Compound Interest 5.3: Applications of $\ln x$ to Economics |
| 8 | 2/27 Review | 2/28 | 2/29 Exam #2 (Chapter 3-5.3) | 3/1 | 3/2 5.4: Further exponential models |
| SPRING BREAK 3/5-3/9 | | | | | |
| 9 | 3/12 6.1: Antidifferentiation | 3/13 | 3/14 6.2: Area and Riemann Sums | 3/15 | 3/16 6.3: Definite Integrals and FTC |
| 10 | 3/19 6.3: Definite Integrals and FTC | 3/20 | 3/21 6.4: Area in xy - plane | 3/22 | 3/23 8.1 & 8.2: Review of trig. functions |
| 11 | 3/26 8.3: Differentiation & integration of sine & cosine | 3/27 | 3/28 8.4: The Tangent & other Trig functions | 3/29 | 3/30 9.1: Integration by Substitution |
| 12 | 4/2 9.1: Integration by Substitution | 4/3 | 4/4 9.2: Integration by Parts | 4/5 | 4/6 Easter Break |
| 13 | 4/9 Easter Break | 4/10 | 4/11 9.2: Integration by Parts | 4/12 | 4/13 Review |
| 14 | 4/16 Exam #3 (Chapter 5.4-9.2) | 4/17 | 4/18 9.3: Evaluation of Definite Integrals | 4/19 | 4/20 9.4: Approximation of Definite Integrals |
| 15 | 4/23 11.1: Taylor Polynomials | 4/24 | 4/25 11.2: The Newton- Raphson Algorithm | 4/26 | 4/27 Review |
| 16 Final Exam | 4/30 | 5/1 | 5/2 | 5/3 | 5/4 Final Exam 10:30 am -12:30 pm |