Calculus and Modeling - Lab

Point Loma Nazarene University, Fall 2022

Instructor: Kyle Havens	**Course:** Math 1021/1064L	**Section:** 1	**Units:** 1
Office: Rohr Science 276	**Classroom:** FSB 104	**Time:** 7:25am – 8:20am	
Email: kylehavens@pointloma.edu	**Day(s):** Friday	**Canvas:** canvas.pointloma.edu	

Required Materials:

1. Laptop or tablet with access to Canvas and a spreadsheet program:
   - ❖ Microsoft Excel – Can be downloaded for free using your PLNU email, see Canvas for instructions.
   - ❖ Google sheets or Numbers are acceptable – But never upload these file types with your submission.
2. No textbook is required for this course.

Prerequisite: A passing grade in Math 1033 (Precalculus) or equivalent. A or B recommended.

University Mission – Teach, Shape, 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.

Office Hours: Monday/Wednesday: 7:30-8:15am @ RS276, after class Monday/Friday, Tuesday and Thursday @ LS201.

Course Description: An introduction to mathematical modeling using mathematical concepts from Calculus I.

Lab Schedule: See the last page of this document.

Foundational Exploration: 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.

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

Student Learning Outcomes:

1. Students will be able to develop mathematical models for simple problems.
2. Students will be able to solve these problems using calculus.

Lab Performance and Letter Grade: Each lab is worth 20 points. The lab final is worth 60 points. Your letter grade in this class will be determined from the number of points you earn out of the total based on the following distribution.

Above 92%: A	82-87%: B	70-77%: C
90-91%: A-	80-81%: B-	68-69%: C-
88-89%: B+	78-79%: C+	60-67%: D

Lab Final Exam: The lab final exam will be held on the last day of lab. It is a cumulative test which emphasizes concepts learned in lab. You may use all of your notes, past labs, and Excel on the lab final, but you may not use the internet.

Labs: Labs will vary in topic and approach from week to week. They often include the use of spreadsheets, formulas, and calculus as an approach to solving a wide array of problems. Some labs are to be submitted in person on the next day of lab, while others are to be submitted on Canvas as a document write up (Word/PDF). Details for each lab will be provided in Canvas. Late labs are accepted within one week of the deadline subject to a 10% penalty. If you must miss lab for a legitimate reason such as an emergency or school related event please let me know ahead of time so that your lab will not be marked down.

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 Academic Policies for further information about 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 Spiritual Development.

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.

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.

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 Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

Academic Accommodations: 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.

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 1-unit lab delivered over 15 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

Sources of Help:

1. Professor. If you have questions, email me, ask before/during/after class, or come to my office hours.
2. Other classmates. Form study groups and work together.
3. Tutoring. Available in Rohr Science or through the Tutoring Center. Their hours will be on Canvas.
4. Online resources. Posted on Canvas, or find them yourself via YouTube, Khan Academy, etc.
5. Practice exams. Look at them ahead of time and use them to assess your understanding.

Syllabus is Subject to Change: This syllabus and schedule are subject to change due to unforeseen circumstances. If you are absent from class, it is your responsibility to check any announcements made while you were absent.

Course Schedule: Changes may occur due to unforeseen circumstances.

Date	9/2/2022	9/9/2022	9/16/2022	9/23/2022
Schedule	**Lab 1 - Finance** Different Types of Interest	**Lab 2 - Finance** Retirement Savings	**Lab 3 - Finance** Series and Annuities	**Lab 4 - Finance** Amortization Schedule

Date	9/30/2022	10/7/2022	10/14/2022	10/21/2022
Schedule	**Lab 5 - Continuity** Transfer Curves	**Ethics Lab** Points for Participation	**Lab 6 - TBD** TBD	*No Lab* Fall Break

Date	10/28/2022	11/4/2022	11/11/2022	11/18/2022
Schedule	**Lab 7 - Modeling** Log or Exponential?	**Lab 8 - Modeling** Building the Model	**Lab 9 - Modeling** Using the Model	**Lab 10 - Modeling** Finalizing Conclusions

Date	11/25/2022	12/2/2022	12/9/2022	
Schedule	*No Lab* Thanksgiving Break	**Extra Day** Catch Up or Review	***Lab Final***	*Finals Week*