



Mathematical, Information and Computer Sciences Department

School of STEM

MTH3012 Number Theory

2 Units

Spring 2026

Meeting days/times: MWF 1:30-2:30 PM

Meeting location: RS395

Final Exam: Friday 5/8 1:30-4:00 PM

Instructor Title and Name: Dr. Maria Zack

Phone: 619-849-2458

Email: mzack@pointloma.edu

Office Location and Office Hours:

Below are the times that I work to hold open for office hours. If none of them work you can email me to see if we can find another time. I offer both in person (office RS246) and Google Meet options for office hours. [Use this link](#) to book an appointment if you want a time reserved for you or if you want to use Google Meet. You can also just stop by my office.

Monday 1:00-2:00 PM

Tuesday 8:00-9:00 AM and 2:00-3:00 PM

Wednesday 9:00-10:00 AM and 5:00-6:00 PM

Thursday by appointment only

Friday 1:00-3:00 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 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.

Course Description

MTH 3012 - Number Theory with Proofs (2)

An introduction to proofs using the study of natural numbers, integers, prime factorization, divisibility, congruences, multiplicative functions, continued fractions, quadratic residues. Methods used include investigation, conjecture, inductive and deductive proofs. Offered on a Quad basis.

Prerequisite(s): MTH 1074 with a grade of C- or higher.

Program and Course Learning Outcomes

- Students will be able to write proofs.
- Students will be able to apply their mathematical knowledge and critical thinking to solve problems. (CC: CT)
- Students will be able to speak about their work with precision, clarity and organization. (CC: OC)
- Students will be able to write about their work with precision, clarity and organization. (CC: WC)
- Students will collaborate effectively in teams.

Assessed in this class: Students will be able to write proofs.

Signature Assignment: A graded proof which is a "Proof of the Week."

Required Texts and Recommended Study Resources

Students are responsible for having the required course textbooks prior to the first day of class.

All supplemental materials posted on this course site (including articles, book excerpts, or other documents) are provided for your personal academic use. These materials may be protected by copyright law and should not be duplicated or distributed without permission of the copyright owner.

Elementary Number Theory by Gareth Jones and J. Mary Jones

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 2 unit class delivered over fifteen weeks. Specific details about how the class meets the credit hour requirement can be provided upon request. (Based on 37.5 hours of student engagement per credit hour.)

Assessment and Grading

Graded Components

- **Homework:** Homework will be assigned daily and will be due at the start of class the Friday of the following week. But do your homework every day or you will end up struggling.
- **Projects:** There will be projects assigned some weeks and they will replace class meetings so that if it is a group project, you will have the class time to work on them.
- **Proof of the Week:** There will be 4-5 of these proofs assigned throughout the semester. They are an opportunity for you to show your progress in proof writing and they will be graded very carefully.
- **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.
- **Final Exam Policy:** Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the [Traditional Undergraduate Records: Final Exam 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.
- **Late work will not be accepted** without prior consent or a well-documented emergency.
- 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.

Grade Distribution

Homework	25%
Projects	12%
Exam	20%
Proofs of the Week	13%
<u>Final Exam</u>	<u>25%</u>
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 the Exam or the Final Exam in order to pass the class. That is, a score of 60% must be achieved on one of the Exams, 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
A [92.5-100]	B+ [87.5-90]	C+ [77.5-80]	D+ [67.5-70]	F [0-60]
A- [90-92.5]	B [82.5-87.5]	C [72.5-77.5]	D [62.5-67.5]	
	B- [80-82.5]	C- [70-72.5]	D- [60-62.5]	

Final Examination Policy

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the [Traditional Undergraduate Records: Final Exam 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.

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.

Artificial Intelligence (AI) Policy

You are allowed to use Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro 1.5, GrammarlyGo, Perplexity, etc) to generate ideas, but you are not allowed to use AI tools to generate content (text, video, audio, images, problem solutions, proofs, etc.) 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 in accordance with the Americans with Disabilities Act (ADA). 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 619-849-2533). Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines allowed accommodations. Professors are able to view a student's approved accommodations through Accommodate.

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. Accommodations are not retroactive so clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

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. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any accommodations.

Additional Course Information

Additional PLNU policies and practices that apply to this course can be found at the following link:

<https://docs.google.com/document/d/11BgAANLOJ9tjt837d24EZ181ukM2qzHF/edit>

Assignments At-A-Glance

Date	Details	Due
Fri Jan 16, 2026	Assignment Week 1 Syllabus Quiz	due by 5pm
Wed Jan 21, 2026	Assignment Week 1 Homework	due by 1:30pm
Wed Jan 28, 2026	Assignment Week 2 Homework	due by 1:30pm
	Assignment Project: Group Proofs	due by 1:30pm
Wed Feb 4, 2026	Assignment Proof of the Week 1	due by 1:30pm
	Assignment Week 3 Homework	due by 1:30pm
Wed Feb 11, 2026	Assignment Week 4 Homework	due by 1:30pm
Wed Feb 18, 2026	Assignment Week 5 Homework	due by 1:30pm
Wed Feb 25, 2026	Assignment Proof of the Week 2	due by 1:30pm

Date	Details	Due
	Assignment Week 6 Homework	due by 1:30pm
	Assignment Exam	due by 1:30pm
Wed Mar 4, 2026	Assignment Project: Induction - Class Replacement for Wednesday 2/25	due by 1:30pm
	Assignment Week 7 Homework	due by 1:30pm
Wed Mar 18, 2026	Assignment Week 8 Homework	due by 1:30pm
Wed Mar 25, 2026	Assignment Week 10 Homework	due by 1:30pm
	Assignment Project: Chinese Remainder Theorem - Replacement for Class 3/25	due by 1:30pm
Wed Apr 1, 2026	Assignment Proof of the Week 3	due by 1:30pm
	Assignment Week 11 Homework	due by 1:30pm
Wed Apr 8, 2026	Assignment Week 12 Homework	due by 1:30pm
Wed Apr 15, 2026	Assignment Video Assignment - Class Replacement 4/8	due by 1:30pm
	Assignment Week 13 Homework	due by 1:30pm
Wed Apr 22, 2026	Assignment Proof of the Week 4	due by 1:30pm
	Assignment Week 14 Homework	due by 1:30pm
Wed Apr 29, 2026	Assignment Project Chapter 4 and 5 Proofs - 4/22 Class	due by 1:30pm

Date	Details	Due
	Assignment Week 15 Homework	due by 1:30pm
Fri May 8, 2026	Assignment Final Exam	due by 1:30pm
	Assignment Week 16 Homework	due by 1:30pm