# MTH 2023: Fundamentals of Elementary Mathematics II

3 units

*Spring 2025*

**When: Tuesday & Thursday 2:30 – 3:45 pm**

**Where: Latter Hall (LA) 02**

**Final Exam: Tuesday, 5/6, 4:30 – 7:00 pm**

| INFORMATION | SPECIFICS FOR THE COURSE |
|---|---|
| **Instructor title and name:** | Dr. Catherine Crockett, Professor of Mathematics |
| **Phone:** | (619) – 849 - 2723 |
| **Email:** | catherinecrockett@pointloma.edu |
| **Office location and hours:** | Rohr Science 222, MWF 8:30 to 9:30, T&TH 10:00 to 11:30, TH 1:00 to 2:00,  F 10:30 to 12:00 |

**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.

**WELCOME MESSAGE**

I look forward to spending this semester with you. You will be amazed at how easy some concepts are to understand, and equally amazed at how challenging some problems are to solve. Please know that your fellow classmates and I will be here to help you through it. Also, persistence and hard work mean a lot more in this class than "intelligence." Put in time and effort and you will succeed. Skip class and homework and you will struggle.

## Course Description

Catalog Description:

MTH2023 Fundamentals of Elementary Mathematics II (3 units)

A continuation of Mathematics 2013 focusing on additional knowledge necessary for a California multiple-subject teaching credential (K-8). Topics covered in this course include data analysis and statistics, probability, combinations and permutations, simulations as well as standard and non-standard measurement. Planar and three-dimensional geometry and geometric constructions are studied, including an algebraic approach to geometry. This class is highly interactive and emphasizes group work and cooperative learning.

Prerequisite: MTH 1013 or equivalent, MTH2013 (3 Units) Fundamentals of Elementary Mathematics I.

## Course Learning Outcomes

- Students will be able to demonstrate a facility with operations on the integers.
- Students will be able to demonstrate a facility with operations on the rational numbers.
- Students will be able to apply concepts from number theory to solve problems.

## Required Texts and Recommended Study Resources

Required Materials:

- Billstein, Libeskind, and Lott, *A Problem Solving Approach to Mathematics for Elementary School Teachers,* 13th Edition
- Needed Supplies: A calculator, a compass, a protractor, a ruler, and access to a computer.

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.

## 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 3-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.)

**Distribution of Student Learning Hours**

| Category | Time Expectation in Hours |
|---|:---:|
| Videos | 18.75 |
| Reading Assignments | 24 |
| Written Assignments | 48 |
| Video Notes | 15 |
| Review Sessions | 2.5 |
| **Chapter Reviews** | 1.75 |
| **Exam** | 1.25 |
| **Final Exam** | 2.5 |
| **Total Hours** | 113.75 |

## Assessment and Grading

Graded Components

- **Weekly Class Participation:** Attendance at the Tuesday class meetings are required. We will also have optional Thursday problem sessions most Thursdays. Please see the class calendar. In these class meetings, we will work on to work on activities and problems. Some classwork may be graded, and some you will get full credit just for attempting.

- **Notes and Videos**: Each section will have videos to watch, and you should take notes. Your notes are to be submitted in Canvas by midnight on Monday.

- **Warm Up Questions**: After you watch the videos and take notes, you will have a small set of warm up questions to do and submit in Canvas. These problems will help me to identify the areas where students are struggling before we meet for class on Tuesday.

- **Written Homework**: The homework is designed to allow you to grasp the concepts; it is not an end in itself.  The homework problems will be taken from the Textbook and will be submitted handwritten on paper at the start of class on Tuesday.  There may also be other activities that are completed as homework.  Each homework set will usually be due one 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.  I will drop one homework score.  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.*

- **Mid-Term Examination and the Cumulative Final Examination**. Both examinations 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. In such cases, all make-up exams will occur at 8:30 am on the Saturday between classes and the Final Exam week. 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 Tuesday May 6, 2025, from 4:30-7:00 PM in our 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 <u>one</u> 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**

| Grade Distribution | |
|---|---|
| Mid- Semester Exam | 25% |
| Final Exam (Cumulative) | 35% |
| Warm Up Questions | 5% |
| Videos and Notes | 5% |
| Class Participation | 5% |
| Written Homework | 25% |
| Total | 100% |

**GRADING SCALE**

A passing grade requires getting at least 60% in one of the two tests or on the final exam. Grades are based on the number of points accumulated throughout the course. Approximate minimal percentages required to obtain a given grade are:

| 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] |

**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 <u>one</u> 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.

**INCOMPLETE 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. Late work need not be accepted. Make-up tests will be given only by prior arrangement with the instructor for reasons of documented emergency.
- **Incomplete grade:** Incompletes will only be assigned in extremely unusual circumstances. You may request a grade of I (incomplete) only if you are having a passing grade and at least 70% of the course work is completed.

## 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) 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](mailto:EAC@pointloma.edu) or 619-849-2486). 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. The EAC makes accommodations available to professors at the student's request.

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 special 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/18i1pUoY0iCfB8w7JKxVvACQW309X-JRB/edit?usp=sharing&ouid=116164865489739533893&rtpof=true&sd=true

| WK | MONDAY: Video Notes and Warm Up Questions Due | TUESDAY: Class Meeting + Homework Due | THURSDAY: Problem Session for Homework |
|---|---|---|---|
| 1 | 1/13<br>Nothing | 1/14<br>Introduction to class<br>9.1: Determining Probabilities<br>9.2: Multistage Experiments and Modeling Games | 1/16<br>Question Session |
| 2 | 1/20<br>9.3: Simulations and Applications in Probability<br>9.4: Permutations and Combinations in Probability | 1/21<br>9.3: Simulations and Applications in Probability<br>9.4: Permutations and Combinations in Probability<br>**Due: Written Homework Sections 9. 1 & 9.2** | 1/23<br>Question Session |
| 3 | 1/27<br>10.1: Designing Experiments/ Collecting Data<br>10.2: Displaying Data: Part 1 | 1/28<br>10.1: Designing Experiments/Collecting Data<br>10.2: Displaying Data: Part 1<br>**Due: Written Homework Sections 9. 3 & 9.4** | 1/30<br>Question Session |
| 4 | 2/3<br>10.3: Displaying Data: Part 2<br>10.4: Measures of Central Tendency and Variation | 2/4<br>10.3: Displaying Data: Part 2<br>10.4: Measures of Central Tendency and Variation<br>**Due: Written Homework Sections 10.1 & 10.2** | 2/6<br>Question Session |
| 5 | 2/10<br>11.1: Basic Notions<br>11.2: Curves, Polygons, and Symmetry | 2/11<br>11.1: Basic Notions<br>11.2: Curves, Polygons, and Symmetry<br>**Due: Written Homework Sections 10.3 & 10.4** | 2/13<br>Question Session |
| 6 | 2/17<br>11.3: More About Angles<br>11.4: Geometry in Three Dimensions | 2/18<br>11.3: More About Angles<br>11.4: Geometry in Three Dimensions<br>**Due: Written Homework Sections 11.1 & 11.2** | 2/20<br>Question Session |
| 7 | 2/24<br>Exam Questions | 2/25<br>Review<br>**Due: Written Homework Sections 11.3 & 11.4** | 2/27<br>Question Session |
| 8 | 3/3<br>No videos- study for exam | 3/4<br>Mid-term Exam<br>**Due: Chapters 9, 10 & 11 Reviews** | 3/6<br>No Question Session |
| | | Spring Break 3/10 to 3/14 | |
| 9 | 3/17<br>12.1: Congruence Through Constructions<br>12.2: Additional Congruence Theorems | 3/18<br>12.1: Congruence Through Constructions<br>12.2: Additional Congruence Theorems | 3/20<br>Question Session |

| | | | |
|---|---|---|---|
| 10 | 3/24<br>12.3: Additional Constructions<br>12.4: Similar Triangles and Other Similar Figures | 3/25<br>12.3: Additional Constructions<br>12.4: Similar Triangles and Other Similar Figures<br>**Due: Written Homework Sections 12.1 & 12.2** | 3/27<br>Question Session |
| 11 | 3/31<br>13.1: Linear Measure<br>13.2: Areas of Polygons and Circles | 4/1<br>13.1: Linear Measure<br>13.2: Areas of Polygons and Circles<br>**Due: Written Homework Sections 12.3 & 12.4** | 4/3<br>Question Session |
| 12 | 4/7<br>13.3: The Pythagorean Theorem, Distance Formulas, and Equation of a Circle<br>13.4: Surface Area | 4/8<br>13.3: The Pythagorean Theorem, Distance Formulas, and Equation of a Circle<br>13.4: Surface Area<br>**Due: Written Homework Sections 13.1& 13.2** | 4/10<br>Question Session |
| 13 | 4/14<br>13.5: Volume, Mass, and Temperature<br>14.1: Translations and Rotations | 4/15<br>13.5: Volume, Mass, and Temperature<br>14.1: Translations and Rotations<br>**Due: Written Homework Sections 13.3 & 13.4** | 4/17<br>EASTER BREAK<br>No meeting. |
| 14 | 4/21<br>EASTER BREAK | 4/22<br>14.2: Reflections and Glide Reflections<br>14.3: Dilations | 4/24<br>Question Session |
| 15 | 4/28<br>Exam Questions | 4/29<br>Review<br>**Due: Written Homework Sections 13.5 & 14.1** | 5/1<br>Review for the final |
| Finals | 5/5 | 5/6<br>**Final Exam 4:30- 7:00**<br>**Due: Written Homework Sections 14.2 & 14.3**<br>**Review Chapters 9-14** | |