

# Math 223 Spring 2013

<b>Time and Place:</b>	TR 1:30-2:45 p.m. LE 108
<b>Instructor:</b>	Professor Max Hankins
<b>Phone Number:</b>	849-2219
<b>Office Number:</b>	S210
<b>Office Hours:</b>	Tuesday 11:45 a.m.-1:15 p.m. and 3:00-4:15 p.m. Thursday 11:45 a.m.-1:15 p.m. and 3:00-4:15 p.m.

These are the hours that I will definitely be available. You can come by my office any time and if I am free I will help you (you can also call me at home if you call before 7:45 p.m. 760-745-2501). My email is [max.hankins@gmail.com](mailto:max.hankins@gmail.com). I will be checking this on a regular basis and this is the more reliable way to get ahold of me other than office hours.

**Text:** *Mathematics for Elementary Teachers (8<sup>th</sup> Edition)*  
By Musser, Burger and Peterson

## Needed Supplies:

- Calculator (it needs to have at least a square root key and a memory)
- Geometry tools: compass, protractor, ruler
- A pair of scissors

## Course Description:

MTH223 (3) Foundations of Elementary Mathematics II

A continuation of Mathematics 213 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: Mathematics 213.

## Class Learning Outcomes:

- Students will be able to construct geometric figures using a compass and straight edge.
- Students will be able to compute area and volume.
- Students will be able to distinguish between the appropriate uses of probability and statistics to solve problems.

## Philosophy and Approach:

MTH223 (and MTH213 in the Fall) includes the college-level mathematics and instructional methods needed to teach elementary school mathematics in ways consistent with the recommendations of the professional publications and with the California State Department of Education's *Mathematics Framework*. Material is selected for inclusion because teachers need to know it and understand it in order to teach elementary school mathematics effectively. Also, course activities and assignments are designed to assist you in gaining a deeper understanding of mathematics sufficient for effective teaching.

Our approach to mathematics for elementary teachers is based on a specific theory of teaching and learning mathematics called constructivism. Research in learning theory shows that students who learn mathematics effectively must be actively involved in the process, not just passive listeners/observers. In particular, in order to really learn and understand mathematical ideas and processes you must become deeply involved in activities such as exploring, discussing, analyzing, explaining, conjecturing, defending, negotiating, testing, and

evaluating. To do this you need good problems to solve, interaction with others on solutions, and opportunities to write your conclusions.

### Objectives:

The course is designed to help you:

- acquire knowledge and develop understanding of the conceptual and procedural foundations for teaching elementary school mathematics;
- develop the ability to teach mathematics developmentally (i.e., basing procedural knowledge on clear connections with prior conceptual knowledge);
- acquire the knowledge and develop the ability to create a problem solving environment in the classroom, to set and achieve teaching goals, to stimulate and manage classroom discourse, to use technology effectively, and to make ongoing instructional decisions; and
- acquire confidence sufficient to teach elementary mathematics positively and enthusiastically

### Grading:

Grades are based on the total number of points accumulated throughout the course. The points for each activity are:

#### Individual Grading Distribution

2 Individual Exams (250 points each)	500 points
Final Exam	300 points
Individual Homework	100 points
Group Homework	<u>100 points</u>
Total	1000 points

Approximate minimal points required to obtain a given grade are:

	A	B	C	D
+		(875, 900)	(775, 800)	(675, 700)
	[925, 1000]	[825, 875]	[725, 775]	[625, 675]
-	[900, 925)	[800, 825)	[700, 725)	[600, 625)

Note that scores of 599 or lower will result in an F.

### Homework:

Homework will be assigned each day at the end of class. All homework assigned in a week will be **due at the start of class** the next Thursday. No late homework will be accepted except by prior arrangement or with a documented emergency. Homework assignments are posted on the bulletin board by my office door. The object of the homework is to learn how to do the problems so I expect to see calculations on your homework using the terminology and methods of the class and not just the answer. A random selection (the same for all people) of the problems will be graded on any homework assignment.

### Exams:

There are two in-class exams. If you do not take an exam you will receive a zero for it. Late exams may be taken only by prior arrangement or with a documented emergency. I must participate in the decision for you to miss an exam, this means that you need to phone me before missing an exam.

### 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. The final is comprehensive and is given on **Thursday MAY 2, 1:00-3:00 p.m.**

**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.

**Some Tips About This Class:**

- You will have reading every night. Don't get behind! Reading mathematics is a fairly slow process and will require you to read things more than once.

- Read with a pencil in hand. Be sure to fill in details and check the author's computations. I will probably help your studying if you write these calculations in the margins.
- Work lots of problems. Part of becoming good at mathematics is practice.
- Work in groups. You learn a lot if you have to explain your solution to someone else (we will be doing this in class).
- Stay current with your assignments (cramming won't help)
- If you have a question **ASK**.

## Spring 2012

## MTH 223 Schedule

	Sunday	Monday	Tuesday	Wed	Thursday	Friday	Saturday
<b>January</b>			1	2	3	4	5
	6	7 New Student Orientation	8 No Class (Monday Schedule)	9	10 10.1 Organizing and Picturing Information	11	12
	13	14	15 10.2 Analyzing Data	16	17 11.1 Probability and Simple Experiments	18	19
	20	21 Martin Luther King Jr. Day	22 11.2 Probability and Complex Experiments	23	24 11.3 Additional Counting Techniques	25	26
	27	28 Spiritual	29 11.4 Simulation, Expected Value, Odds, Conditional Probability	30 Renewal	31 12.1 Recognizing Geometric	1 Week	2
<b>February</b>	3	4	5 12.2 Analyzing Shapes 12.3 Properties of Geometric Shapes	6	7 12.4 Regular Polygons and Tessellations	8	9
	10	11	12 12.5 Describing Three Dimensional Shapes	13	14 Review	15	16
	17	18	19 Exam #1 (10.1-12.5)	20	21 Go over Exam 13.1 Measurement with Standard and non-Standard Units	22	23
	24	25	26 13.2 Length and Area	27	28 13.3 Surface Area	1	2
<b>March</b>	3	4 Spring	5 _____	6 Break	7 _____	8 Week	9
	10	11	12 13.4 Volume	13	14 14.1 Congruence of Triangles 14.2 Similarity of Triangles	15	16
	17	18	19 14.3 Basic Euclidean Constructions (Compass and Straight Edge)	20	21 14.4 Additional Euclidean Constructions	22	23
	24	25	26 14.5 Geometric Problem Solving Using Triangles and Review	27	28 Easter Recess	29	30
<b>April</b>	31 Easter	1 Easter Recess	2 15.1 Distance and Slope in the Coordinate Plane	3	4 EXAM #2 (13.1 - 14.4)	5	6
	7	8	9 Go over Exam 15.2 Equations and Coordinates	10	11 15.3 Geometric Problems Solving Using Coordinates	12	13
	14	15	16 16.1 Transformations	17	18 16.2 Congruence and Similarity Using Transformations	19	20
	21	22	23 16.3 Geometric Problem Solving Using Transformations	24	25 Review for Final	26	27
	28	29	30 Final Exam 1:00-3:00	1	2	3	4