Math 223 Fundamentals of Elementary Mathematics

Spring 2018 -- Blended (3 units)

Thursday 2:30-3:45 Req., Tuesday 2:30-3:45: Opt. LBRT 202

Instructor: Ryan Botts, Ph.D.
Office Hours: Posted in Canvas

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Text: *Mathematics for Elementary Teachers: A Problem Solving Approach (11th edition)* By Billstein, Libeskind and Lott (Access via canvas, you may use the code from the previous semester)

Needed Supplies: Access to a computer, calculator, compass, protractor and ruler.

Course Description
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.

Philosophy and Approach:
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.

The mathematical experience of the students in MTH213 and MTH223 varies widely. This means that different students will need to spend different amounts of time to learn the material. To help assist in this process, the class is designed as a blended class. You will be doing pre-tests, reading and some homework problems (you get two attempts at each problem) online this will allow you spend the amount of time that you need to learn the basics before we engage in activities in class.

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 knowledge and develop 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
- acquire confidence sufficient to teach elementary mathematics positively and enthusiastically

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.

Grading:

Your grade for the course is based on:

Online Homework	15%
Written Homework	20%
Review Exercises for Exams	5%
1 in-Class Written Exam	25%
Cumulative Final Exam	35%
Total	100%

The grading scale for the course is:

	A	**B**	**C**	**D**
+		(87,90)	(77,80)	(67,70)
	[92,100]	[82,87]	[72,77]	[62,67]
-	[90,92)	[80,82)	[70,72)	[60,62)

Note that a student who fails both the In-Class Exam and the Final Exam will not pass the class regardless of the total points accumulated.

Graphical Schedule of Assignments

A graphical representation of assignments can be seen in the schedule below.

Credit Hour Information: Distribution of Student Learning Hours

It is anticipated that you will spend a minimum of 37.5 participation hours per credit hour in your course. The estimated time expectations for this course are shown below:

Reading: Text and Notes	29
Online Homework	21
In-Class Meeting + Written Exam	18.75
Written Homework	27
Exam Preparation (online reviews)	15
Final Exam	2.5
TOTAL	113.25

Homework:
You will have two types of homework:
Online Homework - this will be due at 11:59 PM the Wednesday before our class face to face meeting. Your online homework will be graded by the computer. You will have two attempts to work each problem.
Written Homework - this 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. In your written homework I expect to see calculations 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 is one in-class exam and a final exam. 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.

University Mission:
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 becomes an expression of faith. Being of Wesleyan heritage, we aspire 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.

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 Attendance Policy in the in the Undergraduate Academic Catalog.

Because this course is a hybrid course, **here is how attendance will be calculated:**
Face to face portion of the class: You must be present on time for the full class for you to be considered present in the face to face meeting.

Online portion of the class: You are expected to work on material online every week. In order to get credit for being "present" in the online portion of the class each week you must complete at least one online homework assignment or exam review assignment (for test weeks) before the due date/time for that week.

If you miss 10% of the class, you will receive a warning. If you miss 20% of the class, you will be automatically de-enrolled.

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:
If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See Disability Resource Center for additional information. For more details see the PLNU catalog under Academic Accommodations. Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

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 the catalog for definitions of kinds of academic dishonesty and for further policy information.

Final Exam (THURSDAY MAY 3, 4:30-7:00 PM):
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. This schedule can be found on the university website and in the course calendar. No requests for early examinations will be approved. 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 consider changing the exam date and time for that particular student.

Copyright Protected Materials:
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.

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

E-mail and Messages:
I expect that you regularly use e-mail. I will periodically send you information and updates via e-mail and/or via canvas. In the first week of class you must activate your PLNU e-mail account if you are not currently using it. Please try to send questions about specific problems or course details to me via Canvas so that all members of the class can see the response.

Some Tips About This Class:

- Reading mathematics is a fairly slow process and will require you to read things more than once. Do not get behind, you want to be working on class material most days.
- Read with a pencil in hand. Be sure to fill in details and check the author's computations. It will probably help your studying if you write these calculations in a notebook.
- Read the material and work the online problems with the text before attempting quizzes and written homework.
- 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)

Spring 2018 Weekly Academic Calendar

	S	M	T	W	Th	F	S
January		1	2	3	4	5	6
	7	8	9	10	11 Intro	12	13
	14	15 **Martin Luther King Jr. Day**	16 Open Lab	17 9.1-9.3 Online	18 9.1-9.3 Activities	19	20
	21	22	23 Open Lab	24 9.4-9.5 Online	25 9.4-9.5 Activities 9.1-9.3 HW Due	26	27
	28	29	30 Open Lab	31 10.1-10.3 Online	1 10.1-10.3 Activities 9.4-9.5 HW Due	2	3
February	4	5	6 Open Lab	7 10.4-10.5 Online	8 10.4-10.5 Activities 10.1-10.3 Due	9	10
	11	12	13 Open Lab	14 11.1-11.2 Online	15 11.1-11.2 Activities 10.4-10.5 HW Due	16	17
	18	19	20 Open Lab	21 11.3-11.4 Online	22 11.3-11.4 Activities 11.1-11.2 HW Due	23	24
	25	26	27 Open Lab	28	1 **Exam** 11.3-11.4 HW Due	2	3
March	4	5 **Spring**	6	7 **Break**	8	9 **Week**	10
	11	12	13 Open Lab	14 12.1-12.2 Online	15 12.1-12.2 Activities	16	17
	18	19	20 Open Lab	21 12.3-12.4 Online	22 12.3-12.4 Activities 12.1-12.2 HW Due	23	24
	25	26	27	28	29 Easter	30 Easter	31
April	1 **Easter**	2 Easter	3 Open Lab	4 13.1-13.2 Online	5 13.1-13.2 Activities 12.3-12.4 HW Due and Projecct Due (Canvas)	6	7

	8	9	10 Open Lab	11 13.3-13.4 Online	12 13.3-13.4 Activities 13.1-13.2 HW Due	13	14
	15	16	17 Open Lab	18 14.1-14.3 Online	19 14.1-14.3 Activities 13.3-13.4 HW Due	20	21
	22	23	24 Open Lab	25 14.4-14.5 Online	26 14.1-14.5 Activities and Final Review 14.1-14.3 HW Due	27	28
	29	30	1	2	3 **Final Exam** **4:30-7:00 PM**	4	5

Week	Due Date	Textbook Problems
1		None
2	1/25/2018	9.1: 2,5,6,9,10 9.2: 2,5,6,11,14 9.3: 1,4,7,8
3	2/1/2018	9.4: 2,3,6,7,10,11,14 9.5: 2,3,6,7,10,12
4	2/8/2018	10.1: 1,4,5,7,11 10.2: 2,4,5,14,15 10.3: 1,4,6,9,11
5	2/15/2018	10.4: 1,2,5,7,9,15,16 10.5: 2,5,6,14,15
6	2/22/2018	11.1: 2,6,9,11,14,15 11.2: 3,8,9,16,19,20
7	3/1/2018	11.3: 1,2,8,9,11,12(a,b,c,d) 11.4: 2,4,5,6,9,12
8		None
9	3/22/2018	12.1: 2,7,8,10,12 12.2: 3,4,5,8,9,19(a,b)
10	4/5/2018	12.3: 2,3,4,12,13(a,b),14 12.4: 3,4,5(a,b),7,10,11
11		None
12	4/12/2018	13.1: 1,3,5,7,8,15 13.2: 1,3,7,8,11
13	4/19/2018	13.3: 1,3,4,6(a,b),7,9 13.4: 1,2,3,4,7,8
14	4/27/2017	14.1: 2,5,6,11,16 14.2: 2(a,b,c,d),6,8,9,12 14.3: 2,6,8(b,d),9,10 (Project also due)

15	5/4/2017	14.4: 1,2,7,12,15 14.5: 3,4,5,11,13,15