Math 444 Fall 2014

Time and Place: MWF 8:30-9:35 a.m. S014

Instructor: Maria Zack, Ph.D.

Phone Number: 849-2458

Office Number: S222

Office Hours:

Monday	1:00 - 2:00
Tuesday	10:30 - 11:30
Wednesday	11:00-12:00
Thursday	8:30 - 10:00
Friday	11:00-12:00 and 1:00 - 2:30

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 8:45 p.m.** 760-753-7861). I keep a sign-up sheet on my office door and you can sign up for any empty time slot (there are slots other than my office hours) if you want to be sure that the time is reserved for you. If you are have a question or just want to hang out, come by my office.

Text: *A First Course in Abstract Algebra (7th Edition)* by Fraleigh

Content:
This course is a study of groups, rings, fields and related structures. We will be studying all of these looking at both theory and applications.

Learning Outcomes:
- Students will be able to write proofs.
- Students will be able to demonstrate facility with algebraic structures.
- Students will be able to speak about their work with precision, clarity and organization.
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- Students will collaborate effectively in teams.
- Students will be able to understand and create arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats.

Course Philosophy:
Mathematics requires active participation. Participation means: asking questions, making conjectures and checking them, providing solutions to problems, sharing ideas with classmates. We will be spending time in class working on proofs together.

Grading:
Your grade for the course is based on:

Homework Exercises	250 points
3 Mid Term Exams (150 points each)	450 points
A comprehensive final exam	300 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 in class** the next Wednesday. 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 three 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:
The final is cumulative and is given on **WEDNESDAY DECEMBER 17, 7:30 -10:00 A.M**. 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.

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 as approved in writing by the Provost for specific students participating in certain university-sanctioned activities. Excused absences still count toward the 10%-20% limits, but allow students to make up work, quizzes, or tests missed as a result of a university-sanctioned activity. Activities of a unique nature, such as labs or other activities identified clearly on the syllabus, cannot be made up except in rare instances when instructors have given advanced, written approval for doing so. Whenever the number of accumulated absences in a class, for any cause, exceeds ten (10) percent of the total number of class meetings, the faculty member should send an e-mail to the student and the Vice Provost for Academic Administration (VPAA) warning of attendance jeopardy. If more than twenty (20) percent of the total number of class meetings is reported as missed, the faculty member or VPAA may initiate the student's de-enrollment from the course without further advanced notice to 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 consistent with university policy in the Grading section of the catalog. There are no refunds for courses where a de-enrollment was processed. For more details see the PLNU catalog: http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#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.

Academic Accommodations:
While all students are expected to meet the minimum academic standards for completion of their courses as established by the instructors, students with special needs 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 contacts the student's instructors and provides 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 special needs and guarantees all qualified students equal access to the benefits of PLNU programs and activities. For more details see the PLNU catalog:
http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#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:
The Point Loma Nazarene University community holds the highest standards of honesty and integrity in all aspects of university life. Any violation of the university's commitment is a serious affront to the very nature of Point Loma's mission and purpose. Violations of academic honesty include cheating, plagiarism, falsification, aiding academic dishonesty, and malicious interference. The details of PLNU's meaning of each of these words can be found in the PLNU catalog at:
http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Academic_Honesty

A student remains responsible for the academic honesty of work submitted in PLNU courses and the consequences of academic dishonesty beyond receipt of the final grade in the class and beyond the awarding of the diploma. Ignorance of these catalog policies will not be considered a valid excuse or defense. Students may not withdraw from a course as a response to a consequence.

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
(http://catalog.pointloma.edu/content.php?catoid=14&navoid=1089#Academic_Honesty).

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.

E-mail:
I expect that you regularly use e-mail. I will periodically send you information and updates via e-mail. In the first two weeks of class you <u>must</u> activate your PLNU e-mail account if you are not currently using it.

Cell Phones:
Turn off any cell phone, pager or things that are distracting while you are in class. Also, do not text or work on other classes while in class (to do so is disrespectful to me and your classmates) and it is not the best use of class time.

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*.

MTH444 Schedule Fall 2014

Wk 1	1-Sep Labor Day	2-Sep	3-Sep Sec 0: Sets & Relations Sec 1: Introduction	4-Sep	5-Sep Sec 2: Binary Operations
Wk 2	8-Sep Sec 3: Isomorphic Structures	9-Sep	10-Sep Sec 4: Groups	11-Sep	12-Sep Sec 5: Subgroups
Wk 3	15-Sep Sec 6: Cyclic Groups	16-Sep	17-Sep Sec 6: Cyclic Groups Sec 7: Generating Sets	18-Sep	19-Sep Sec 7: Generating Sets Review for Exam
Wk 4	22-Sep **Exam #1**	23-Sep	24-Sep Go Over Exam Sec 8: Permutations	25-Sep	26-Sep Sec 8: Permutations
Wk 5	29-Sep Sec 9: Orbits, Cycles and Alternating Groups	30-Sep	1-Oct No Class - See Special Assignment - D4	2-Oct	3-Oct Sec 9: Alt. Groups Sec 10: Cosets
Wk 6	6-Oct Sec 10: Cosets	7-Oct	8-Oct Sec 11: Direct Products and Abelian Groups	9-Oct	10-Oct Sec 13: Homomorphisms
Wk 7	13-Oct Sec 13: Homomorphisms Sec 14: Factor Groups	14-Oct	15-Oct Sec 14: Factor Groups	16-Oct	17-Oct Sec 15: Factor Group Computations
Wk 8	20-Oct Sec 15: Factor Groups Sec 18: Rings & Fields	21-Oct	22-Oct Sec 18: Rings and Fields Exam Review	23-Oct	24-Oct No Class - Fall Break
Wk 9	27-Oct **Exam #2**	28-Oct	29-Oct Go Over Exam Sec 19: Integral Domains	30-Oct	31-Oct No Class - See Special Assignment - Sec 20
Wk 10	3-Nov No Class - See Special Assignment - Sec 20	4-Nov	5-Nov Sec 19: Integral Domains Sec 20: Fermat & Euler	6-Nov	7-Nov Sec 21: Field of Quotients and Integral Domains
Wk 11	10-Nov Sec 21: Field of Quotients and Integral Domains	11-Nov	12-Nov Sec 22: Rings of Polynomials	13-Nov	14-Nov Sec 23: Factorization of Polynomials
Wk 12	17-Nov Sec 23: Factorization Exam Review	18-Nov	19-Nov **Exam #3**	20-Nov	21-Nov Go Over Exam Sec 23: Factorization
Wk 13	24-Nov Sec 26: Homomorphisms and Factor Rings	25-Nov	26-Nov Thanksgiving Vacation	27-Nov	28-Nov Thanksgiving Vacation
Wk 14	1-Dec Sec 26: Homomorphisms Sec 27: Ideals	2-Dec	3-Dec Sec 27: Ideals	4-Dec	5-Dec Sec 29: Extention Fields
Wk 15	8-Dec Sec 30: Vector Spaces	9-Dec	10-Dec Sec 31: Algebraic Extentions	11-Dec	12-Dec Sec 33: Finite Fields Discuss Final Exam
Finals	15-Dec	16-Dec	17-Dec **7:30-10:00 AM FINAL EXAM**	18-Dec	19-Dec