

Math 110B, Spring 2020: Algebra

Mon, Wed, Fri 9-9:50am
on Zoom 891-573-173

Prerequisites

- You are expected to know Linear Algebra from 115A and Ring Theory from 110A.

Learning Goals

- You will learn Group Theory, which solidify the foundation and give you more insights into theory of rings and fields that you have learned.

Instructor

Chi-Yun Hsu

Office: Math. Sciences Building 5242

Contact: Use Piazza rather than email to contact me, see below.

Office Hours:

Mon. 5:15-6pm PDT

Wed. 4-4:45pm PDT

or by appointment

Teaching Assistants

Matthew Gherman (MS 2951, mgherman@math.ucla.edu)

Section: Tuesday 9-9:50am

Course website: <https://ccle.ucla.edu/course/view/20S-MATH110B-1>

Textbook: Hungerford, Abstract Algebra, 3rd ed.

We will be covering Chapter 7-9.

Course Discussion Forum on Piazza: <http://piazza.com/ucla/spring2020/math110b>

Please use Piazza, rather than emails, to contact me. You are also encouraged to use Piazza to have online discussion with classmates on course materials, homeworks, or any other questions.

Grade

Homework	20%
Midterm I	25%
Midterm II	25%
Final Exam	30%

I will assign letter grades based on your course score. The basic cutoff is $A- \geq 90\%$, $B- \geq 80\%$, $C- \geq 70\%$, $D- \geq 60\%$, $F < 60\%$. I will only decide the actual cutoff after the Final Exam when all scores are ready. I might make the cutoffs lower depending on the distribution of scores, but I will not raise the cutoffs.

Homework

I will assign homework problems on the course website on a weekly basis. The homework is **due on Tuesday 11:59pm PDT the next week**. It is better to do the homework problems after each lecture, rather than rushing to finish at one time.

Please submit your homework onto Gradescope. **Late homework will NOT be accepted.** To accommodate the strict policy, **the lowest homework score will be dropped.** On the other hand, if you are under emergency circumstances such as accident or severe sickness happened well

before the deadline so that you cannot possibly have time to do the homework, you can let me know and ask for a deadline extension. However, the deadline extension request is only accepted **before** the deadline, and will only be granted for emergency circumstances.

I encourage you to discuss homework problems with other students, either form a study group or use online discussion tools such as Piazza mentioned above. However, you must write up the solutions on your own, as writing helps you deepen your understanding. **Apart from help from me or the TA, you must acknowledge any collaborators or references at the top of your assignment.**

Exams

There will be NO make-ups for missed midterm. You must take the final exam in order to pass the class. Make-ups for the final exam are permitted only under exceptional circumstances. Tentative exam dates are:

Midterm I	Apr. 22 (Wed) 9am – Apr. 23 (Thurs) 9am	Week 1-3 Material
Midterm II	May 13 (Wed) 9am – May 14 (Thurs) 9am	Week 4-6 Material
Final Exam	Jun. 10 (Wed) 9am – Jun 11 (Thurs) 9am	Week 1-10 Material

For exams, you are allowed to use any non-human resources including internet, textbook, notes, lecture videos, etc. You are NOT allowed to seek help from other people, including posting exam questions on online forums.

Tentative exam format is a time limit of **1.5 hours** during the 24-hour window for Midterms, and a time limit of **3.5 hours** during the 24-hour window for the Final Exam. The extra 0.5 hour is to account for time needed for uploading files. **If you are a CAE student and needs extra time, please contact me for more time extension.**

Learning Resources

- Your fellow students: You are encouraged to form study groups with your classmates.
- Office hours: You do not need to make an appointment; just show up to ask any questions.

You are encouraged to make good use of these resources. At the same time, don't be too quick to run for help. Learning is challenging and takes time. You should not expect to solve every problem immediately. Try a couple of different approaches before asking for help. Often you learn the most from things you try that don't work!

Tentative Calendar

Week 1	Definition and Examples of Groups, Basic Properties (7.1,7.2)
Week 2	Subgroups, Homomorphisms, Isomorphisms (7.3,7.4)
Week 3	Congruence, Normal subgroup (8.1,8.2)
Week 4	Symmetric and alternating groups, Midterm I, Quotient groups (7.5,8.3)
Week 5	Quotient groups and homomorphisms, (8.4, 9.1)
Week 6	Direct Products, Finite abelian groups (9.1,9.2)
Week 7	Sylow Theorems, Midterm II (9.3)
Week 8	Proof of Sylow Theorems (9.4)
Week 9	Structure of Finite groups, Groups of small orders (9.5)
Week 10	Further Topics, Review