Math 103B, lecture B: Spring 2023

Lecture: MWF 3:00p-3:50p.   Center 113

Instructor: Kwun Chung; prefer to go by *Angus Chung*
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Office hours: 4-5pm, AP&M 5402 (MF) / 6442 (W)

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Textbook: *Abstract Algebra: Theory and Applications*, by Thomas Judson, Version 2022.

Reading: Reading the sections of the textbook corresponding to the assigned homework is considered part of the homework assignment. It will be expected that you read the assigned material in advance of each lecture. You will be required to complete a short reading exercise on canvas prior to every class (except for midterms).

Announcements: The announcements page on Canvas will be my regular means of communication with the class. It is your responsibility to check this regularly and you may want to adjust your Canvas notification settings (under your Account) in order to receive notifications that you may be missing. Some students choose to have announcements emailed to them and that is fine, but you should refer to the version up on Canvas for the most up-to-date information.

Important Dates:

HW due	Most Mondays
Progress Check	In class, most Wednesdays; see calendar
Midterm	Apr 26, May 17 (Wed), in class
Final Exam	Jun 14 (Wed), 3-5pm
	(duration for final is tentative; it could be potentially shorter)

All progress checks and midterms will be in our regular classroom. *There are no make-up or retake midterm / final. You should not enroll in the class if you cannot attend the midterm or final exam at its scheduled time.*

If for any reason, you cannot complete a progress check, keep in mind that the lowest check will be dropped.

Grades:
Your final grade will be computed using the following scheme: 10% reading exercise + 15% homework (dropping lowest) + 15% progress checks (dropping lowest) + 15% first midterm + 20% second midterm + 25% final exam.

The course will be curved, so there is no grade scale available now.

Homework:
Completing the homework is an essential step to succeed in this course. All HW will be due on Mondays at 11:59pm on gradescope. No late submission will be accepted. Your lowest one homework will be dropped.

You are welcome to talk to others (your classmates, friends, TA and me) about the problems. In fact, this is a great way to learn! **However, I will ask you to follow the following 2 rules strictly, for your own benefit of succeeding in this class.**

1) **You are required to write the solution by yourselves in your own words.** One major portion of this class is to practice how to come up with a good piece of mathematical writing. If you write your answers with someone else's solution in front of you or fresh in your mind, then *you will learn much less*. So, it is fine to come up with ideas and perhaps an outline of a proof with your classmates, but you should not attempt to write a solution together. I will be very unhappy and take actions if I see solutions that look very similar.

2) **Do not look up solution online**, and **do not ask for help before trying the problems yourselves**. By doing so, you give up the learning opportunity by thinking about the problems yourselves. Even if you think you fully understand the problem after you read the solution, you will learn far less than going through the struggles to come up with your own ideas. If you are stuck, feel free to ask your classmates, TA or me for help. But do not let them tell you what you should do. Instead, have them guide you by asking you questions.

Progress Checks:
Every week (almost), we will have a short progress check in class. It will be 2-3 short questions on the material from the previous check til the last lecture, usually lasting for 5 minute. The schedule for the progress checks can be found in the calendar below. The progress checks are on Wednesdays at the beginning of the class, and we will not have checks on the midterm weeks. There is no make-up check, and your lowest check will be dropped.

Midterms and Final Exam:
The first midterm covers everything up to and including Apr 24 (Mon). The second midterm covers materials in weeks 4-7 (Apr 28 - May 5). The final exam is cumulative and covers everything in the quarter, with a focus on material after the 2nd midterm. No make-up will be given, in particular for traveling plans or conflict with another class. If you have any unavoidable conflict or emergency, let me know as soon as possible. In such cases, it will likely be that I will adjust the grading scale so your final exam will weigh more.

OSD: If you have an OSD form, please submit it by the end of Wednesday, Apr 12.

Academic Integrity: According to the UCSD Policy on Integrity of Scholarship (`http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2`), "no student shall engage in an activity that undermines academic integrity or facilitates academic integrity violations by others". According to the policy, you are not allowed to:

- Complete, in part or in total, the write-up of any assignment for another person.
- Have any of your course work be completed, in part or in total, by someone else.
- Plagiarize or copy even part of the work of another person or source and submit it as your own work.
- Employ aids excluded by the instructor in completing any assignment.

Students caught cheating will face an administrative sanction which may include suspension or expulsion from the university.

Name and Gender Pronouns: UC San Diego is committed to supporting its students' name and gender preferences. Class rosters provided to your instructor and TAs have students' legal names, but we will strive to honor your request to be addressed using a preferred name or gender pronoun. Please let your instructor and TA know your preferences so that we can make changes to our records. (Certain university records may be beyond our ability to change, however.)

Equity, Inclusion, and Respect: We are committed to the UC San Diego Principles of Community (see `https://ucsd.edu/about/principles.html`). "To foster the best possible working and learning environment, UC San Diego strives to maintain a climate of fairness, cooperation, and professionalism. These principles of community are vital to the success of the University and the well being of its constituents." The principles of community include (but are not limited to):

"We affirm each individual's right to dignity and strive to maintain a climate of justice marked by mutual respect for each other." "We reject acts of discrimination based on race, ethnicity, sex, gender identity, age, disability, sexual orientation, religion, and political beliefs, and, we will confront and appropriately respond to such acts." "We promote open expression of our individuality and our diversity within the bounds of courtesy, sensitivity, confidentiality, and respect." "We are committed to promoting and supporting a community where all people can work and learn together in an atmosphere free of abusive or demeaning treatment."

Visit the Office for Equity, Diversity, and Inclusion (at `https://diversity.ucsd.edu`) for more information.

(Week) Sunday dates	M		W		F
(1) Apr 2	Group Actions, Orbits, Stabilizers		Class Equations; Orbit-Stabilizer Theorem		Rings
(2) Apr 7	Integral Domains and Fields; HW1		Check 1; Ring homomorphisms, Ideals		Quotient Rings, Isomorphism Theorems
(3) Apr 16	Maximal and Prime Ideals; HW2		Check 2; Chinese Remainder Theorem		Polynomial Rings
(4) Apr 23	Catch-up / Review; HW 3		Midterm 1		Division Algorithm, Euclidean Algorithm; Drop w/o W
(5) Apr 30	Irreducible Polynomials; HW 4		Check 3; Field of Fractions		UFD and PID
(6) May 7	Polynomial Rings over Integral Domains; HW 5		Check 4; Field extensions		Algebraic extensions; Drop w/ W
(7) May 14	Catch-up / Review; HW 6		Midterm 2		Minimal polynomial
(8) May 21	Finite extension; HW 7		Check 5; Algebraic closure		Splitting Fields
(9) May 28	Memorial; HW 8		Check 6; Finite fields		Separable extensions
(10) Jun 4	Normal extensions; HW 9		Check 7; Galois Theory		Catch-up / Review