Math 113   VAINTROB

Syllabus, Spring 2019

Basics

INSTRUCTOR. Dmitry Vaintrob,

INSTRUCTOR'S EMAIL. vaintrob@math.berkeley.edu. Please use email or come to my office during office hours to get in touch with me.

INSTRUCTOR'S OFFICE. 1073 Evans Hall

CLASS LOCATION. Hearst Memorial Mining Building, room 310.

CLASS TIME. Tuesdays and Thursdays, 5:00-6:30 PM.

OFFICE HOURS. Tuesday, 10:00-11:00 AM and Thursday, 9:00-11:00 AM (second hour shared with my math 104 OH), in 1073 Evans Hall.

GSI. Julian Chaidez. (jchaidez@berkeley.edu). Shared with all 113 classes.

TEXTBOOK. *A First Course in Abstract Algebra*, by Fraleigh, 7th edition, ISBN:9780201763904.

COURSE WEBSITE. `https://math.berkeley.edu/~vaintrob/math113`.

Content

OVERVIEW. This is a first course on abstract algebra (groups, rings and fields) for students who have some experience working with and writing rigorous proofs.

COURSE TOPICS. Sets and relations. The integers, congruences, and the Fundamental Theorem of Arithmetic. Groups and their factor groups. Commutative rings, ideals, and quotient fields. The theory of polynomials: Euclidean algorithm and unique factorizations. The Fundamental Theorem of Algebra. Fields and field extensions.

Exam dates

Midterm #1 will be on Tuesday, **March 12**, during regular class time.

Midterm #2 will be on Tuesdsay, **April 23**, during regular class time.

The Final exam will be on Friday, **May 17**, 11:30 AM - 2:30 PM.

Exam dates are not subject to change and there will be no makeup exams given (except in cases of documented medical or family emergency). If you foresee a conflict with one of these dates, keep in mind that there are 7 different sections of math 113 this semester, each with its own exam dates. If one of these dates does not work and you are unable to change sections because of space constraints, please let the GSI or myself know about your situation and we will try to work something out.

Grading

40%: Homeworks and in-class assignments. Lowest score dropped.

20%: Final exam.

20%: Midterm I (see note below).

20%: Midterm II (see note below).

Note. If it benefits your score, the lowest midterm grade will be replaced by your grade on the final exam.

Homework: due dates and submission

- Homeworks will be assigned each Tuesday, and put on the course webpage. They will be due by Tuesday of the following week, at the beginning of class.

- Submissions after 5pm will be considered late. Illegible homeworks or homeworks without a legible name may not be graded. Printed homeworks typeset using LaTeX (or a comparable math typesetting program) are encouraged.

- Late homeworks will be accepted in class two days after the due date (i.e., Thursday), but will be penalized 10% of the total score. Students with DSP accomodations can get the penalty waived. Any later homework submissions will not be accepted (including for DSP accomodated students).

- If you would like to request an extension because of special circumstances, please email me at least two days before the original due date. If you don't have a valid reason or do not notify me early enough, you will not be able to get an extension (with the exception of medical emergencies).

- The grading will be based on expectation of mature, rigorous proofs from all students. Proofs must be logically correct and concise within reason. Even if a proof is correct but is written unclearly, or if in addition to a correct proof the writeup includes superfluous unnecessary pieces, points may be taken off.

- Collaboration is encouraged, but everyone must write up their own solutions. Please list collaborators and anyone else who helped at the beginning of your homework assignment. Listing collaborators will not affect anybody's grade, and is requested for convenience of the grader and myself.

Quizzes and in-class assignments

There will be several in-class quizzes on units of class material, starting with a quiz on equivalence relations and set logic. These will be announced at least a week in advance, and will be worth between 5% and 15% of your grade, taken out of the homework component. Not all quizzes will be graded. For each graded quiz I will assign optional "quiz preparation problems" to be done before the quiz and "quiz make-up" problems after, as part of the homework. You can get a full score for any given quiz either by correctly answering all problems, or by

doing both all the pre- and post-quiz problems correctly (or some combination). No make-up quizzes will be given: if you miss a quiz, you can do all associated problems instead.

There may also be collaborative in-class assignments, again worth cumulatively at most 5% of your grade.

Exams

- Exams are closed book, without notes, calculators or other external aids.

- The first midterm will most likely cover sets and groups, and the second midterm will cover rings.

- The final will be cumulative and will cover the entire course material.

Attendance

- Please be respectful of yourselves and others: refrain from talking or checking cell phones during class.

- Lectures will not follow the course book exactly: some material will be presented differently and we may diverge from the book at some points. Anything done in class can be on a homework set or test, unless stated otherwise. If you have to miss class for some reason, it will be your responsiblity to get notes from someone else.

Miscellaneous Information

- If you will need special accommodations approved by the Disabled Students Program, make sure you discuss these with me as soon as possible.

- Incomplete "I" grades are almost never given. The only justification is a documented serious medical problem or genuine personal/family emergency. Falling behind in this course or problems with workload in other courses are not acceptable reasons.

- Academic dishonesty will not be tolerated. Any such incidents will be reported to the appropriate authorities and will almost certainly result in you failing the course.