Math 3354 – Survey of Algebra
Spring 2016

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Office Hours:
Tuesday 11:00 am - 12:00 pm
Wednesday 10:00 am - 12:00 pm
by appointment.


Description: This course introduces basic structures of modern algebra: groups, rings and fields. Approximately first 4 weeks of the course will be devoted to elementary number-theoretic topics (Chapter 2 of the book): greatest common divisor, unique factorization theorem, congruences etc. You should be familiar with most of these from high school, but we will study them at a more sophisticated level. The core part of the course (about 7 weeks) is concerned with group theory (Chapters 3 and 4). In the last 3 weeks we will discuss selected topics from ring theory (Chapters 5 and 6) and (if time allows) some additional topics, possibly not covered by the book (in the latter case, additional references or online notes will be provided). I will assume basic familiarity with material of Chapter 1 (mostly set theory). You should read this chapter on your own in the first couple of weeks and ask me questions about unclear points.

Proofs: MATH 3354 is a proof-based course. Everything we discuss in class will be rigorously proved. More importantly, you are expected not only to understand proofs, but also to learn how to construct your own proofs and how to write proofs (so that others can understand your argument). It is not expected that you have taken a proof-based course before MATH 3354. However, MATH 3354 will not include any lectures devoted specifically to proof writing; instead you will be expected to develop this skill gradually as we progress through the material. If you feel that you need a more detailed introduction to proof writing, you may consider taking MATH 3000 (Transition to Higher Mathematics) before or concurrently with MATH 3354.

Comments on Linear Algebra: The only official prerequisite for this course is MATH 1320. However, you are strongly encouraged to take linear algebra (MATH 3351 or APMA 3080)
before or concurrently with MATH 3354. The only formal linear algebra skill that will be needed in MATH 3354 is the ability to add and multiply matrices (this is covered, for instance, in Section 1.6 of our book). However, some of the material in MATH 3354 is based on the ideas, which also appear in linear algebra, but in less abstract setting. Thus, having taken linear algebra may help you better understand some of the topics in MATH 3354.

**Homework:** Weekly homework will be assigned from each section that we cover. No late homework will be accepted. However, two lowest homework scores will be dropped. You are encouraged to work on homework together, but you must write up solutions independently, and in your own words. In particular, you should not consult solutions during the process of writing down your solution.

Write clearly, and organize your problem solution. Please staple your homework.

Due to the large class size, it will not be possible to grade all homework problems. In each assignment 2-4 selected (but not announced in advance) problems will be graded for credit.

**Exams:**
- First Exam    Thursday, February 25, 2016    in class
- Second Exam  Thursday, March 31, 2016     in class
- Final Exam    Tuesday, May 10, 2016       1400-1700

Dates for the exams are fixed. Make plans now to be certain these dates are in your calendar. Make-ups will be given only under extreme circumstances (such as serious illness). Except for emergencies, you must obtain my permission for a make-up before the exam. If you miss an exam without a compelling reason, you will be assigned the score of 0 on that exam. University regulations specifically prohibit early make-ups.

**Extra Credit Activities:** It might be possible to have one extra credit activity about applications of group theory. If this happens, it will be announced to the whole class after the first exam, and it would be the only extra credit activity in this class.

**Cheating:** Do not cheat. If you cheat, you risk failing the course and the Honor Committee will be notified.

**Grading:**
- First exam: 20%
- Second exam: 25%
- Final exam: 40%
- Homework: 15%

**In Class:** You are required to come to class. Important announcements will be given in class. Should you miss a class, please be sure to get notes and other important information from a classmate.
You must bring your book, as we will use it frequently during class. Read the section covered before class.

No cell phones, ipods, computers or other gadgets may be used in class. Texting is strictly prohibited.

Come to class on time and do not leave early. If you have to arrive late or leave early, please let me know in advance.

**Math Tutoring Center:** Free tutoring from the university. Schedule and location will be announced later.

Any student with a documented disability should contact me as soon as possible so that we can discuss arrangements to fit any needs.