INTRODUCTION TO ABSTRACT ALGEBRA I (FALL 2017)

Course. MATH 01:640:351 (MW 3:20-4:40 pm, ARC 205)

Instructor. Dr. P. H. Tiep

Contact information.
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Office hours. Monday 5:00 – 5:50 pm, Wednesday 11:00 – 11:50am. If this time
is inconvenient, make a special arrangement with me whenever you need help. You
are also welcome to come to my office at any time (without prearrangement) if I
am in and available.

Textbook. ‘Abstract Algebra’ by Thomas W. Hungerford, Brooks/Cole Cen-
gage Learning, 3rd. edition (2014). After class, read your notes and the textbook
material thoroughly before attempting the assigned problems.

Description. Abstract algebraic systems, including groups, rings, fields, polyno-
mials, and some Galois theory.

Prerequisites: CALC3; 01:640:250; and 300 or permission of department.

Content. We will study the theories of rings, fields, vector spaces, and groups,
covering most of Chapters 1–7 of the text. Time permitting, there will be some
excursions into the later chapters.

This is a high-level course. You will be expected to follow and learn proofs which
are given in the text, and in lectures, and to construct your own proofs. You should
expect to become more experienced in this as the term progresses. The course is
one of two that satisfies the algebra requirement for the mathematics major. The
alternative is Math 350 (Advanced Linear Algebra).

As a general rule, undergraduates should expect to spend approximately two
hours outside of class for every hour spent in class. As Math 351 is a 4-credit
course, and is one of our more challenging courses,

students in Math 351 should be prepared to spend 8 to 10
hours per week on the course, in addition to the class meetings.

Homework and Workshops. Homework assignments (see my webpage) will be
updated frequently. Homework will be collected on the due dates in the Workshop
sessions, and graded.

In the Workshop sessions you will work on some problems, some from the text-
book and some others to be handed out in the workshop, under your professor’s
supervision. Selected workshop problems will be assigned to be written up, handed
in, and graded.

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Exams (subject to change). There will be two 50-point in-class (midterm) exams given on Oct. 18 (Wednesday) and Dec. 11 (Monday). The final exam is comprehensive, and given on Dec. 22 (Friday), 12:00-3:00 pm. The midterms are given in the usual classroom. The final exam’s location is known a few weeks before the end of term, and will be announced in class.

The ONLY permissible reason for make-up exams is based on verifiable medical grounds or religious holidays. In the former case, written statements (accompanied by phone numbers) of attending physicians, or letters from the Dean’s office, are required to prove genuine medical emergencies. In the latter case, the instructor must be informed at least two weeks ahead of the exam date.

Grade.

Total: \[2 \times 50 \text{ (for the midterms)} + 100 \text{ (for the final)} + 50 \text{ (for the homework)} = 250.\]

Important. Your written work should be neat. Show all your work. Answers with no work and/or no explanations will receive no credit. Please remember that the instructor is here to help you, so never afraid to ask for help.

Students are expected to attend every scheduled class and to be familiar with the University Class Attendance policy. It is the student’s responsibility to keep informed of any announcements, syllabus adjustments or policy changes made during scheduled classes.

Students are expected to behave in accordance with the Code of Academic Integrity [http://academicintegrity.rutgers.edu/academic-integrity-policy](http://academicintegrity.rutgers.edu/academic-integrity-policy)

The university is fully committed to compliance with the Americans with Disabilities Act; policies and procedures are indicated at [http://ods.rutgers.edu](http://ods.rutgers.edu)

Students who wish to request special accommodations must present a Letter of Accommodations to the instructor as early in the term as possible.

Student-Wellness Services.

- **Just In Case Web App** [http://codu.co/cee05e](http://codu.co/cee05e)
  Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

- **Counseling, ADAP & Psychiatric Services (CAPS)** (848) 932-7884
  17 Senior Street, New Brunswick, NJ 08901 / [www.rhscaps.rutgers.edu](http://www.rhscaps.rutgers.edu)/

  CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students’ efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

- **Violence Prevention & Victim Assistance (VPVA)** (848) 932-1181
  3 Bartlett Street, New Brunswick, NJ 08901 / [www.vpva.rutgers.edu](http://www.vpva.rutgers.edu)/

  The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

- **Disability Services** (848) 445-6800
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Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / https://ods.rutgers.edu/

The Office of Disability Services works with students with a documented disability to determine the eligibility of reasonable accommodations, facilitates and coordinates those accommodations when applicable, and lastly engages with the Rutgers community at large to provide and connect students to appropriate resources.

- Scarlet Listeners (732) 247-5555 / http://www.scarletlisteners.com/
  Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.

Homework assignments (tentatively, with due dates, and also contain write-up assignments given at workshop sessions. See my webpage for the most updated list).

- Sep. 13: 1.1 #7; 1.2 #8; 1.3 #21; 2.1 #11, 21; 2.2 #8; 2.3 #6; WS2 write-up
- Sep. 20: 3.1 #1, 13, 15a, 27; 3.2 #5, 8; 3.3 #9, 11 (b,c,d); 19; WS3 write-up
- Sep. 27: 6.1 #3, 9, 19, 20, 40; 6.2 #2, 9, 29; WS4 write-up
- Oct. 4: 4.1 #5(b,d), 10, 15; 4.2 #4, 5(b,d); 4.3 #10,11; WS5 write-up
- Oct. 11: 4.3 #12; 4.5 #4(a), 6; 4.6 #2(a,c), 5
- Oct. 18: Review for Midterm 1, no HW due
- Oct. 25: 5.1 #6, 8, 12; 5.2 #6, 14(a); 5.3 #1, 5(b), 9
- Nov. 1: 7.1 #4, 5, 16; 7.2 #2, 5, 7(b,c); 7.3 #6, 15
- Nov. 8: 7.2 #13, 31; 7.3 #28, 52; 7.4 #12, 23, 45; 7.5 #3, 13, 21
- Nov. 15: 8.1 #5, 9, 16, 23; 8.2 #1, 14, 18
- Nov. 22: 8.1 #32, 34; 8.2 #15, 20, 24
- Dec. 6: 8.3 #2, 3, 8; 8.4 #2, 13, 25
- Dec. 13: 9.1 #2, 18; 9.2 #1, 3(a,b,e), 7(a,b,c), 12, 16