

COURSE SYLLABUS

CLASS HOURS: 2:35-3:50pm TR in Wickersham 112 (CRN 7521, CRN 10288)
 INSTRUCTOR: Dr. Zhigang Han
 OFFICE: Wickersham 216
 OFFICE HOURS: Mon 2-3, Tue 11-12, 2-2:30, Thu 11-12, 2-2:30, Fri 2-3, or whenever I'm in my office
 OFFICE PHONE: (717) 871-7310
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Required Text: Judson, Thomas W., Abstract Algebra: Theory and Applications, 2019 Annual Edition.

Free download: <http://abstract.ups.edu/download.html>

Course Description and Objectives: Math 345 is a 3-credit introduction to abstract algebra. The prerequisites are Math 310 and Math 322 (C- or better in both courses). In this course, you will:

- Learn about the fundamental structures of abstract algebra. Topics include: groups, subgroups, cyclic groups, permutation groups, normal subgroups, quotient groups, group homomorphisms and isomorphisms, direct products of groups, finite abelian groups, rings, integral domains, fields, ideals, quotient rings, ring homomorphisms and isomorphisms, polynomial rings.
 - Learn to write proofs in the context of abstract algebra.
 - Gain an appreciation for the axiomatic development of modern mathematics, as exemplified by algebraic structures.
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Grading Plan: Coursework will be weighted as follows:

Problem sets	Presentation	Higher test scores	Lower test score	Final exam
25%	5%	25%	15%	30%

• **Math 504 students are graded separately as follows:**

Problem sets	Paper	Presentation	Higher test scores	Lower test score	Final exam
25%	10%	5%	20%	10%	30%

The letter grade will be assigned as follows:

A: 93% - 100%	A-: 90% - 93%	B+: 87% - 90%	B: 83% - 87%	B-: 80% - 83%	C+: 77% - 80%
C: 73% - 77%	C-: 70% - 73%	D+: 67% - 70%	D: 63% - 67%	D-: 60% - 63%	F: 0% - 60%

Tests and Final Exam: There will be two tests and one final exam. The final exam will be cumulative.

- Test 1: Thursday, February 27
- Test 2: Thursday, April 2
- **Final: Friday, May 8, 12:30-2:30pm**

Attendance: Attendance is required. Frequent unexcused absence will affect your grade negatively.

D2L: All documents including review materials for all tests and all kind of solutions will be posted on D2L.

Suggested Problems: Suggested problems from the text are listed on page 3. Although they will not be collected, it is absolutely crucial for your success to do as many problems as possible.

Problem Sets: Eight problem sets will be collected and graded (see page 3 for the due dates). **No late problem sets will be accepted, but your lowest score will be dropped.**

You are strongly encouraged to work with fellow students. **However, you must write your own solutions, and you must name all your collaborators. Failure to do so may result in disciplinary action.**

Presentation: Each student will have the opportunity to give a short presentation of a topic in abstract algebra to the class. The student can choose the topic (mostly from suggested problems), but it needs to be approved by the instructor before it is presented.

Paper (for Math 504 only): Each student will write a paper. The student can choose the topic based on his or her interest, although it should be related to abstract algebra.

Academic Honesty: The university's academic honesty policies can be found in the undergraduate catalog. Please be assured that I have absolutely no tolerance for cheating in any way.

Special Accommodations: It is a university policy to provide reasonable accommodations to students with disabilities. Please contact the office of learning services if you wish to discuss this policy: 352 Lyle Hall, 717-871-5554.

Exam Make-up Policy: Make-up exams will be given for reasons described in the undergraduate catalog. These reasons include: personal illness, death or critical illness in the family, participation in a university-sponsored activity, jury duty, military duties, or religious holidays. In any case, you will be asked to provide documentation to justify your absence. **One week notice** is required in the case of foreseeable absences.

Title IX Responsibilities for Faculty: Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment, comply with Title IX of the Education Amendments of 1972, 20 U.S.C. §1681, et seq., and act in accordance with guidance from the Office for Civil Rights, the University requires faculty members to report to the University's Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report to the person designated in the University Protection of Minors policy incidents of sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred.

Information regarding the reporting of sexual violence, and the resources that are available to victims of sexual violence, is available at www.millersville.edu/titleix

Tentative Schedule: The following schedule is intended to give you a good indication of what to expect each week. The schedule may need to be adjusted in the event of severe weather or other unforeseen circumstances.

Dates	Lectures	Others	Dates	Lectures	Others
01/21 T	Ch 1		03/17 T	—	Spring Break
01/23 R	Ch 2		03/19 R	—	Spring Break
01/28 T	3.1		03/24 T	10.1, 11.1	
01/30 R	3.2	PS 1 Due	03/26 R	11.1	PS 6 due
02/04 T	3.2		03/31 T	13.1, Review 2	
02/06 R	3.3		04/02 R	—	Test 2
02/11 T	4.1	PS 2 Due	04/07 T	11.2	
02/13 R	4.2		04/09 R	16.1	
02/18 T	5.1		04/14 T	16.2	
02/20 R	5.1, 6.1	PS 3 Due	04/16 R	16.3	
02/25 T	6.1, Review 1		04/21 T	17.1, 17.2	PS 7 Due
02/27 R	—	Test 1	04/23 R	17.2, 17.3	
03/03 T	6.2, 6.3		04/28 T	Presentations	PS 8 due
03/05 R	9.1	PS 4 due	04/30 R	Final Review	
03/10 T	9.2				
03/12 R	10.1	PS 5 due	05/08 F	Final Exam	12:30-2:30pm

Suggested Problems: The following problems are chosen from the text for you to practice. Although they will not be collected, it is absolutely crucial for your success to do as many problems as possible.

Chapters	Suggested Problems
Ch 1	6, 7, 8, 9, 17, 18, 19, 20, 21, 22, 25, 26, 27, 29
Ch 2	2, 3, 4, 5, 6, 10, 11, 15, 16, 23, 24, 25, 26, 27
Ch 3	3, 6, 7, 8, 9, 10, 12, 13, 14, 25, 26, 30, 31, 32, 33, 34, 35, 39, 40, 41, 42, 45, 48, 53, 54
Ch 4	1, 3, 4, 5, 6, 8, 10, 11, 14, 16, 17, 18, 19, 20, 23, 24, 27, 30, 31, 32, 37, 38, 42, 43, 44, 46
Ch 5	1, 2, 3, 4, 17, 18, 20, 24, 27, 28, 31, 34, 35
Ch 6	1, 2, 3, 4, 5(a-e, g, h), 6, 7, 8, 9, 10, 11, 12, 16, 17, 18, 20, 21
Ch 9	1, 2, 3, 4, 5, 6, 7, 8, 9, 15, 16, 26, 27, 31, 34, 35, 36, 41, 46, 47, 48, 50, 52
Ch 10	1(a)(e), 4(a)(b)(c), 5, 6, 8, 10, 11
Ch 11	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 18
Ch 13	1, 2, 3, 5, 6
Ch 16	1, 2, 3, 5, 9, 10, 12, 16, 17, 18, 19, 23, 24, 37
Ch 17	1, 2, 3, 5, 9, 10, 17, 22, 23, 24, 26