

## Math 301: Abstract Algebra I

Fall 2019 – 3 credits

MWF 10:00am – 10:50am

Carver 0008

Instructor	Jason McCullough 452 Carver Hall 4-8150 <a href="mailto:jmccullo@iastate.edu">jmccullo@iastate.edu</a> ← best way to contact me
Grader	Kate Lorenzen lorenkj@iastate.edu
Office Hours	JM: MF 11:10pm-12:00pm, Tu 2:00pm-3:00pm or by appointment
Textbook	“Abstract Algebra, An Introduction” by Thomas W. Hungerford, third edition. The text is available from the University Bookstore in both hardcopy and electronic format.

### Content

In this class we will begin the study of abstract rings and later groups. We examine parallels between the integers and polynomials.

Referring to the text, we will cover most of Chapters 1-5 and 7.

Prerequisites: Math 165/165H, Math 201 (C- or better), Math 317/407

### Assessment

There will be weekly homework assignments. While you are encouraged to work with the other students, it is important that you **write up your own solutions independently**. I don't want to see multiple papers that are carbon copies of each other. Duplicate solutions will be penalized. It is very important that you do the homework conscientiously and consistently. There will be a homework assignment due during deadweek.

Your lowest 1 homework score will be dropped at the end of the semester.

We will have two in-class midterm exams and a final exam.

### Learning Outcomes

Upon completion of this course, students...

1. Will be familiar with properties of the integers such as prime factorization, divisibility, and congruence
2. will be able to reason abstractly about mathematical structures
3. will recognize and comprehend correct proofs of formal statements and be able to formulate proofs clearly and concisely

### Learning Objectives

1. Students will be able to perform computations involving divisibility of integers.
2. Students will be asked to identify ring-theoretic and group-theoretic properties and identify these properties in familiar rings and groups.
3. Students will provide proofs to simple assertions of ring- and group-theoretic principles.

### Method of Instruction

1. Lectures will emphasize ring- and group-theoretic properties. Weekly homework assignments will ask students to recognize these properties.
2. Weekly homework assignments.
3. Numerous proofs will be presented in class. Students will construct proofs on weekly homework assignments.

### Course Websites

Grades and homework will be available via Canvas. There is a tentative schedule below.

### Grading scheme

Homework	45%
Exam 1 (Oct 7)	15%
Exam 2 (Nov 22)	15%
Final Exam (Dec 16 – 9:45am)	25%

Letter grades will be assigned based on your overall percentage and will be no stricter than a straight-scale (90+ = A, 80+ = B, etc.). If I deem it necessary, I may lower this scale based on exam scores.

### Accessibility Statement

Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly with staff in

Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable accommodations. This document will be made available to the student and instructor either electronically or in hard-copy every semester. Students and instructors are encouraged to review contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. Reasonable accommodations are not retroactive in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at [www.sas.dso.iastate.edu](http://www.sas.dso.iastate.edu), by contacting SAS staff by email at [accessibility@iastate.edu](mailto:accessibility@iastate.edu), or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

### Tentative Schedule

Week (week of)	Monday	Wednesday	Friday
1 (August 26)	App. A	App. B	1.1
2 (September 2)	Labor Day	1.2	1.3
3 (September 9)	1.3	2.1	App. D
4 (September 16)	2.2	2.3	2.3
5 (September 23)	3.1	3.1	3.2
6 (September 30)	3.2	3.3	Review
7 (October 7)	<b>Exam 1</b>	4.1	4.2
8 (October 14)	4.3	4.4	4.4
9 (October 21)	4.5	4.5	4.6
10 (October 28)	5.1	5.2	5.2
11 (November 4)	5.3	7.1	7.1
12 (November 11)	7.2	7.3	7.4
13 (November 18)	7.5	Review	<b>Exam 2</b>
14 (November 25)	<b>Thanksgiving</b>	<b>Holiday</b>	<b>Break</b>
15 (December 2)	8.1	8.1	14.1*
16 (December 9)	13.1*	13.1*	Review
17 (December 16)	<b>Final</b>	<b>Exam</b>	<b>Week</b>

\* if time allows

### Academic Honesty

Iowa State University takes academic misconduct seriously. Any attempt to misrepresent someone else's work as your own can result in penalties ranging from a 0 on that assignment to an F in the course and a report to the university academic misconduct committee.