Peter Sin
Department of Mathematics

College *of* Liberal Arts *and* Sciences

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Introduction to Algebra 1 , Fall 2024 (MAS5311-8526/MAT4930-08B8)

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Abstract Algebra 1 MAS4301/09B1/14244 Fall 2024

Instructor
Prof. Peter Sin

Time and Location
MWF 4, Little 233

Office Hours:
W6, F5 and by appointment.

Description and Goals
This course is an introduction to the ideas of higher algebra, concentrating mainly on the theory of groups, with some theory of rings. Group theory is the mathematical study of symmetry. Students will become acquainted with the axiomatic approach. Many examples of groups will be used to illustrate the abstract concepts. Students will learn to read mathematics slowly and critically and, in so doing, will develop the ability to write careful accurate proofs of their own.

Textbook
Contemporary Abstract Algebra, 9th ed., by Joseph A. Gallian (Brooks/Cole Cengage learning).
You can also use the 8th edition, or the 7th. The assigned homework problem numbers will refer to the 9th ed.
With a few exceptions, the same problems can be found in the earlier editions, but with different numbers. **Please avoid the 10th edition if possible as it has many misprints and errors.**

Course Calendar
MAS4301 Course Calendar

Software
Some examples and exercises in the text make use of GAP.

GAP is a free, top quality, open source package available for Windows, Mac OS X

and Unix variants (including Linux). It can be downloaded from http://www.gap-system.org. GAP is also incorporated in the SageMath system https://www.sagemath.org/.

It is not a course requirement to install and use GAP, but you will find it a good test of your understanding to try to explain the course material to a machine!

Web exercises
True/false problems on Gallian's website

Homework
The following list is the bare minimum. If you are aiming for
a top grade, you will probably want to try to work through all of the exercises
in the assigned chapters. (That's a lot of exercises but once you get the hang of it,
you will find that you can do many of them very quickly.)

Ch.0: This chapter should be treated as prerequisite material. You should already know this stuff. Review this chapter and do any exercises as needed to reinforce your undersanding of the basics.

Ch.1: 1,2,4,5,12,13,16.

Ch.2: 7,8,9,11,13,23,24,28,33,47,49.

Ch.3: 1,2,18,21,28,29,32,34,36.

Ch.4: 2,4,7,11,16,31,37,52.

Ch.5: 3,4,5,6,7,9,23,25,30,58.

Ch.6: 1,2,5,7,8,14,28,37,42,44.

Ch.7: 1,2,8,13,14,17,18,19,25,64.

Ch.8: 1,4,5,14,15,37,54.

Ch.9: 1,2,6,9,11,12,20,37,47,51.

Ch.10: 2,3,4,7,8,9,14,16,29,48,51.

Ch.11: 3,9,15,16.

Ch.12: 1,2,3,4,6.

Final Grades
There will be two in-class tests worth 20 points each, a final worth 40 points and homework assignments worth 20 points in total. The dates of the tests are given in the course calendar. No make-up exams will be given except for documented special reasons such as medical emergencies. Exams can be rearranged for student athletes

only if I am notified at least four weeks in advance.

Sample exams

These samples are intended to help you understand the length and depth of exam questions and how to answer them to earn full credit. Try to resist looking the solutions until you have tried your best to solve the problems, or you will gain little benefit from these samples. If you are tempted to memorize the solutions you will be wasting your time, as none of the sample problems will appear on the actual exams. It also probably means that you need to rethink your approach to learning higher mathematics. The samples are taken from a previous class with 3 in-class exams. They are 50-minute exams. The first two should be useful for our two class exams, and the third represents part of the material covered on the final.

> sample for exam1
> solution
>
> sample for exam2
> solution
>
> Another sample for test 2
>
> sample for exam3
> solution
>
> sample final

Grading Scale

Grades: A=90-100, A-=87-89, B+=83-86, B=78-82, B-=75-77, C+=70-74, C=65-69, C-=60-64, D=50-59, E=0-49

If you think that a score has been **computed incorrectly**, please bring the matter to my attention within one day of your work being returned.

If you think that your work has been **graded incorrectly**, please submit an appeal in writing within seven days of your work being returned, explaining your reasons in detail. Appeals may result in a higher, unchanged, or lower score, depending on the merit of the appeal. Decisions on appeals are final. The final exam cannot be appealed.

The UF regulations on grades are here:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

The UF policy on minus grades is here.

Attendance and Late Policy

Attendance is mandatory, except for absences allowed by UF policies.

The UF policy on attendance is here:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Disabilities statement

Students with disabilities requesting accommodations should first

register with the Disability Resource Center (352-392-8565,
https://disability.ufl.edu/) by providing appropriate documentation. Once
registered, students will receive an accommodation letter which must
be presented to the instructor when requesting accommodation. Students
with disabilities should follow this procedure as early as possible in
the semester.

Health and Wellness

U Matter, We Care: If you or a friend is in distress, please contact
umatter@ufl.edu or 352-392-1575 so that a team member can reach out to the
student.

Counseling and Wellness Center: http://www.counseling.ufl.edu, 352-392-1575.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 352-392-1161.

University Police Department, 392-1111 (or 9-1-1 for
emergencies).http://www.police.ufl.edu/

Honor Code

UF students are bound by The Honor Pledge which states, "We, the members of the
University of Florida community, pledge to hold ourselves and our peers to the highest
standards of honor and integrity by abiding by the Honor Code.
On all work submitted for credit by students at the University of Florida, the following
pledge is either
required or implied: "On my honor, I have neither given nor received unauthorized aid
in doing this
assignment."

The Honor Code (https://sccr.dso.ufl.edu/policies/student-honor-code-student-
conduct-code/)
specifies a number of behaviors that are in violation of this code and the possible
sanctions.
Furthermore, you are obliged to report any condition that facilitates academic
misconduct to appropriate
personnel. If you have any questions or concerns, please consult with the instructor of
this class.

Course Evaluations

Students are expected to provide professional and respectful feedback on the quality
of instruction in this course by completing course evaluations online via GatorEvals.
Guidance on how to give feedback in a professional and respectful manner is
available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the
evaluation period opens, and can complete evaluations through the email they
receive from GatorEvals, in their Canvas course menu under GatorEvals, or

via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at
https://gatorevals.aa.ufl.edu/public-results/.