

[Home](#)[Courses](#)[Papers and preprints](#)[Recent Talks](#)[Algebra Seminar](#)[Past Seminars](#)[Curriculum Vitae](#)[Mathematics Links](#)

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[College of Liberal Arts and Sciences](#)[Mathematics Department](#)[Mathematics Graduate Program Page](#)[University of Florida](#)

## Linear Algebra MAS4105/1071/14607 Fall 2023

### Instructor

Prof. Peter Sin

### Time and Location

MTWF Per. 5, Matherly 007.

### Office Hours:

Dr Sin: TBA

### Description and Goals

The course provides a rigorous and thorough introduction to linear algebra, a subject which is basic to nearly all branches of pure and applied mathematics, with many applications in science, engineering and economics.

The student will learn to read and write proofs of theorems, and develop computational skills. This course is designed to serve majors in mathematics and those engineering and science students interested in a conceptual understanding of the subject.

### Textbook

Linear Algebra, by Insel, Friedberg and Spence (5th ed.). You may also use the 4th or earlier editions. The homework problem numbers below are for the 5th ed. and mostly apply to the 4th editions, but a few conversions will be needed for the 4th and earlier eds.

### Software

GNU octave is free, open source Matlab-like numerical linear algebra software that is easy to install and use.

Matlab is somewhat bigger, fancier, and not free.

SageMath is a free open-source mathematics software system, using a python-based language. It is easy to learn, with lots of online documentation.

You are not required to use octave, Matlab, or SageMath but they are useful tools for learning linear algebra.

### Course calendar

[MAS4105-Calendar](#)

### Homework

The list of homework problems appears below. You should try to solve **all** of the assigned problems. In general, these problems are for practice and do not have to be turned in. The homework part of the grade will be based on **five assignments** to be turned in for grading, which may include some of these problems. You may discuss ideas to solve homework problems (including graded ones) with your classmates, but the written work turned in for grading must be entirely your own. The numbers for the 5th ed. of the text are mostly the same, and changes are noted in the form (5:6, 7:8) to indicate that Q5 and Q7 in the 4th ed. became Q6 and Q8 in the 5th ed.

Chapter 1:

Sect. 1.2: 1, 7, 11, 12, 13, 18.

Sect. 1.3: 1, 5, 8, 11, 12, 13, 15, 17, 22.

Sect. 1.4: 1, 2, 3, 5, 6, 12.

Sect. 1.5: 1, 3, 4, 5, 7, 10, 16, 18, 20.

Sect. 1.6: 1, 2, 3, 6, 11, 26.

Chapter 2:

Sect. 2.1: 1, 3, 9, 12, 13, 15, 16, 17.

Sect. 2.2: 1, 2(a), 5(c), 10, 17.

Sect. 2.3: 1, 2(b), 3(a), 4(a), 9, 12.

Sect. 2.4: 1, 2(e,f), 6, 9, 16, 20.

Sect. 2.5: 1, 2(a), 3(a), 5, 7.

Chapter 3:

Sect. 3.1: 1, 4.

Sect. 3.2: 1, 2(a,b), 3, 5(a), 6(c), 8, 14.

Sect. 3.3: 1, 2(a,b), 4(a), 9, 10.

Sect. 3.4: 1, 2(a,b), 3, 9, 10.

Chapter 4:

Sect. 4.1: 1, 2(a,b), 4(a,b), 8, 13.

Sect. 4.2: 1, 2, 5, 13, 23, 26.

Sect. 4.3: 1, 2, 9, 10, 12, 15, 17, 20, 21.

Chapter 5:

Sect. 5.1: 1, 4(b), 5(a), 9(a), 18(a), 21(b).

Sect. 5.2: 1, 2(b,d), 3(a,b), 9, 17, 14.

Chapter 6:

Sect. 6.1: 1, 3, 8, 11, 13, 15, 26, 29.

Sect. 6.2: 1, 2(a), 6, 8, 19(a).

Sect. 6.3: 1, 2(a), 3, 6, 7, 10, 15.

## Exams and Grading Policy

There will be 2 class exams each worth 20 points and a final exam worth 40 points.

Five homework assignments are worth 4 points each, 20 in total. Your grade will be based on the total (out of 100) of your homework score and the scores on the three exams. The due dates for assignments

and the dates of the class exams and final 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.

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.

## 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**

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: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/#:~:text=No%20grades%20will%20be%20calculated,credit%20is%20awarded%20only%20once.&text=Colleges%20may%20not%20accept%20grade,credit%20in%20the%20same%20field..>

## Samples

Sample for Test 1

Solution to Test 1

sample Test 2

solution to sample Test 2

Sample for final

Solution for Sample final

## 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, <http://www.dso.ufl.edu/drc/>) 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](mailto: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 (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-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/>.