

MATH 3170 - Advanced Linear Algebra

Spring, 2009

3:00 pm - 4:15 pm Mondays and Wednesdays

Instructor: Dr. Mark Budden
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Office Hours: Mondays 11:00-12:50, Wednesdays 11:00-11:50,
or by appointment.

Textbook: *Linear Algebra, Second Edition*, by K. Hoffman and R. Kunze.

Calculator: Calculators will **NOT** be allowed during exams in this class.

Prerequisite: Math 2160 and Math 3000

Description/Purpose of Course: Math 3170 is a proof-based linear algebra course that will rely heavily on each student's ability to write thorough proofs. It is assumed that students have already had a first course in linear algebra, so we will move quickly through chapters 1-5, covering fields, vector spaces, bases, linear transformations, characteristic polynomials, and determinants. We will then cover selected topics from chapters 6-10 (and potentially some topics not covered in the text) as time allows. Potential topics include decomposition, rational and Jordan forms, inner product spaces, spectral theory, bilinear forms, and representation theory of matrix groups.

Homework: A homework assignment will be given each class over the material covered that day. While I will not grade homework, many fundamental concepts are presented in the homework that are essential to your understanding of the subject. Additionally, homework problems give you the opportunity to practice and perfect your proof-writing skills. It is your responsibility to keep up with the assigned homework and see me outside of class if you have any questions.

Exams: There will be 3 in-class exams (100 points each) and one take-home final exam (100 points). At the end of the semester, each student will be allowed to drop their lowest exam grade and replace it with the grade on their final exam, provided that doing so is beneficial to the student's grade. **NO MAKE-UP EXAMS WILL BE GIVEN FOR ANY REASON!** If you miss an exam, it will be the grade that you drop.

Attendance: Students are expected to attend all classes. If a class is missed, it is the student's responsibility to find out about missed material. Attendance will be taken for the first two weeks of class so that I can determine who is enrolled. As with homework, there is usually a high correlation between students that attend all classes and students that perform

well on exams.

Withdrawing: If a student wishes to withdraw from the course, s/he must come and speak with me. If a student withdraws after late registration and by midterm, they will receive a W. Any student withdrawing after midterm will receive a WF.

ADA Accommodations: Any student who may require special accommodations due to a disability should contact the Office of Disability Services in the Division of Student Affairs and should come and speak with me privately as soon as possible. I will work with the Office of Disability Services to provide accommodations according to their documented needs.

AASU Honor Code: The University's policies in regards to the Honor Code and Code of Conduct will be upheld in this class (see catalog p.350). In particular, any student caught cheating will receive a grade of F in the course and may be subjected to further disciplinary actions, possibly including expulsion from the university.

Other: In Math 3170, we will do more than just learn linear algebra (after all, you already learned it in Math 2160). The course is intended to help you develop your ability to write rigorous mathematical proofs and your proficiency to reason mathematically. Most of your homework and exam questions will require you to write proofs, which should be clearly written in complete sentences. If you are questioning whether or not a step should be included, then include it. Do not be afraid to waste paper (see me in my office if you want a stack of scratch paper) or spend too much time on homework problems. Some problems may only require a few minutes, while others may take an hour or more. The more effort you put into the homework, the better understanding you will have of the subject.

Respect your classmates:

If you bring a cell phone to class, then it must be turned OFF!

Show up to class on time.

Do not leave class early.

Grade Distribution:

Exams	300 (200 with dropped exam)
Final	100 (200 with dropped exam)
Total	400

Letter Grades will be assigned on a standard 10-point scale (100% – 90% A, 89% – 80% B, 79% – 70% C, 69% – 60% D, 59% – 0% F).