

MATH 306-02: Linear Algebra II
Fall 2007

Instructor: Dr. S. Cooper

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Office Hours: MF 8:30 am – 10:00 am, R 4:15 pm – 5:15 pm & by appointment.

Correspondence: The best way to reach me is via email. However, emails will only receive a reply if they include an appropriate title and the sender's full name.

Class Times & Location: MTRF 3:10 pm – 4:00 pm, Building 38 – Room 201.

Required Background: MATH 241, and MATH 206 or MATH 244, and a C- or better in MATH 248.

Course Webpage: www.calpoly.edu/~sucooper/courses_fall07/coursedetails.html & blackboard.

Textbook: *Linear Algebra*, 4th Edition, by S. Friedberg, A. Insel and L. Spence, Pearson Prentice Hall.

Content: We will cover much of the material in Chapters 1–5 of the textbook. If time permits we will also cover Sections 6.1 & 6.2.

Learning Objectives: Linear algebra is a very important topic. It is used extensively in both applied and theoretical mathematics. The student should learn the language and methods of linear algebra. We will focus on definitions, theorems, and some applications.

Homework: Homework questions will be assigned each lecture and will be collected once a week (except for exam weeks). Most of the exercises will be proofs. Many students find it difficult to write proofs. As such, you should start your homework several days in advance of submitting it. Some homework problems may require thinking for a long time before you can compose a final solution; this is normal and can be frustrating. The process of working through homework exercises is a critical part of mastering the material in a mathematics course. Although you can discuss the exercises with classmates and myself, please hand in solutions that are written in your words. Please come to office hours if you have questions. *No late submissions will be accepted.*

Quizzes: A quiz will be given once a week (except for exam weeks). Quizzes will be short in length (one short proof, a definition, etc.). These evaluations will be used to gauge your progress with the material.

FAQ: During most classes, questions based on the previous lesson will be posed. Students will either volunteer or be chosen at random to answer. Each student will start with 20 points. If the question is answered correctly, then the student is removed from the FAQ pool (and loud applause is gained!). If a question is answered incorrectly, then 3 points will be deducted and the student remains in the FAQ pool. If a student does not attempt to answer (e.g. is absent), then 10 points will be deducted. This may be an uncomfortable exercise, but a part of mathematics is thinking and presenting ideas in a calm and clear fashion. The questions asked are *not* intended to be tricky or embarrassing. Rather, this exercise is intended to motivate regular attendance, regular studying and to build your confidence.

Dictionary: The mastery of linear algebra requires knowing and understanding many definitions. You will be required to construct and maintain a working dictionary. This will be submitted near the end of the quarter.

Project: During the quarter I will assign a group project. *No late submissions will be accepted.*

Exams: There will be 2 in-class exams given. Also, there will be a cumulative final examination.

Calculator Policy: No calculators or other aids will be allowed during exams. All quiz and exam questions will be designed so that they can be answered without calculators.

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| Course Grades: | Quizzes (Best 7 out of 9) | 10 % |
| | Homework & Project | 20 % |
| | FAQ & Dictionary | 5 % |
| | Exams 1 & 2 | 20 % each |
| | Final Exam | 25 % |

Missed Homework/Quizzes and Exams: There will be no make-up homework/quizzes for *any* reason. If you have to miss a quiz then a grade of zero will be given and this will count as one of your dropped quizzes. A missed exam will count as zero unless alternate arrangements are made *before the test* or acceptable official documentation (such as a doctor's note) explaining the situation is presented.

Academic Dishonesty: You are expected to submit only work that is your own. This will help us gauge your understanding, progress, and abilities for the material. Any dishonesty will result in a grade of F for the course.

Dates to Remember:

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| Friday, September 21 | Homework/Quiz 1 |
| Friday, September 28 | Homework/Quiz 2 |
| Friday, October 5 | Homework/Quiz 3 |
| Friday, October 12 | EXAM 1 |
| Friday, October 19 | Homework/Quiz 4 |
| Friday, October 26 | Homework/Quiz 5 |
| Friday, November 2 | Homework/Quiz 6 |
| Friday, November 9 | EXAM 2 |
| Monday, November 12 | No Class (Veterans' Day) |
| Friday, November 16 | Homework/Quiz 7 |
| Tuesday, November 20 | Homework/Quiz 8 |
| Thursday, November 22 | No Class (Thanksgiving Break) |
| Friday, November 23 | No Class (Thanksgiving Break) |
| Friday, November 30 | Homework/Quiz 9 |
| Friday, December 7 | FINAL EXAM (1:10 pm – 4:00 pm, Building 38 – Room 201) |

Expectations & Tips on How to be Successful in MATH 306:

- * It will be expected that you are comfortable with the material from MATH 206 & 248. You should be able to: use Gaussian elimination to solve systems of linear equations; compute inverses of matrices; compute determinants of matrices; compute eigenvalues and eigenvectors of matrices. We will probably be studying vector spaces, linear transformations on vector spaces, and eigenvalues and eigenvectors more rigorously than you did in MATH 206, but we will not spend class time on how to do the computations; feel free to ask me in office hours.
- * An essential part of the learning process occurs during class. You are expected to attend classes.
- * Starting with the first class, study in-depth and regularly. You are expected to study *25 – 35 hours a week outside the classroom*. Thus, at a minimum you should be studying *2 hours for every one hour of class*.
- * You are expected to read the material to be covered *before* the lecture, and to do the assigned exercises *before* the next class period.
- * Be an active participant and considerate to others during class discussions (*especially for FAQ*).
- * Do not rely on solution manuals! These are readily available and it is tempting to just copy the solutions. However, struggling through the exercises on your own is an important phase of the learning process.
- * Get help as soon as you need it: ask questions in class and office hours; form a study group with your classmates; consider getting a tutor, etc.
- * For exam preparation, practice exercises that have not been assigned. Make sure you know the definitions and statements of theorems.
- * Relax and have fun with the course!