

Mathematics MAT 331 : Linear Algebra
Fall 2011
TR 11:30 a.m. - 12:45 p.m., Room 210

Instructor: Dr. Brad Emmons

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Course Materials

Linear Algebra by Jim Hefferon : <http://joshua.smcvt.edu/linearalgebra/>

Introduction

MAT 331 is a course on Linear Algebra, which deals with linear equations and systems of linear equations. In some sense, linear equations are the easiest types of equations to think about. But this means that we know a great deal about linear equations. In this course, we will deal with two main topics. One of the topics is that of matrices and matrix computations as a way of solving systems of linear equations. We will introduce Gauss-Jordan reduction as one such method. The other main topic is that of abstract vector spaces. We will introduce vectors, along with the concepts of linear independence, span, and bases. After these two topics are developed, we will show how they are connected, and questions about vector spaces can be answered when interpreted in terms of matrices, and vice versa!

Exams

There will be a total of two in-class exams given during the semester, as well as a final cumulative exam. The exams will test your ability to work through some of the computations, as well as your ability to apply the techniques to certain applications. The in-class exams are scheduled for Thursday, September 29 and Thursday November 3, and each will count for 25 percent of your final grade. The final exam will be held on Monday, December 19 from 9:00 a.m. to 12:00 p.m., and will count for 25 percent of your final grade. There will be no make-ups for missed exams. Please look over your schedule as soon as possible. If you see a potential conflict, inform me immediately.

Homework

The best way to learn Mathematics is to solve problems. At the end of each section, there are a variety of exercises that you can look at to help understand concepts and hone your skills. I will suggest problems for you to attempt from the end of the section, but I will not grade these. Instead, I will assign weekly problem sheets that will be collected and graded. These problems will be more in-depth than the drill-type activities and will require more exposition on your part. You will be graded on content, organization and completion of the assignments. In addition to the graded problems, each assignment will carry 5 completion points. To earn 5 out of 5 of the completion points, the assignment must be written up neatly and thoroughly with complete solutions to all of the assigned problems. Late homework will not be graded, but you may still earn completion points on late assignments. The homework is designed to help you identify where you might have difficulties. If you encounter any trouble with an assignment or a concept, seek help!

Attendance

Attendance in MAT 331 is extremely important. Although there is no official attendance policy, note that if you are not in class on a particular day, I will not grade your homework assignment. I will also require that you be in class at 11:30 a.m. and no later.

Grading

Your grade in this course will be based on two main factors: homework, and exams. The homework will be worth 25% of your final grade and the exams 75%. In addition to these factors, minor ethereal factors such attendance, class participation, attitude, and improvement over the course of the semester can also affect your grade. To determine your final grade, 90–100% = A, 80–89% = B, 70–79% = C, 60–69% = D, 59 and below = F, with the top two percents receiving a + and the bottom two percents receiving a –.

Calculators

The use of calculators will not be allowed on any quizzes or exams. None of the work will require any sophisticated computations. You may use a calculator when working on your homework to check your work. However, since will not be allowed to use it on the exam, I suggest you do as much work without your calculator as possible.

Important Dates

Thursday, September 29 – Exam I
Thursday, November 3 – Exam II
Thursday, November 24 – NO CLASS
Thursday, December 8 –Last Day of Class
Monday, December 19, 9:00 a.m. - 12:00 p.m. – Final Exam

Suggestions

Come to class with your homework assignment completed every day
Study for at least 30 minutes each day in addition to completing your homework assignment
Read the section we will be covering *before* we cover it in class
Do not fall behind!
Come to office hours to discuss homework and concepts. I am here to help!

Syllabus

MAT 331 : Linear Algebra

Term : Fall 2011

Week 1	August 30 September 1	Course Policies, Syllabus, One.I – Solving Linear Systems One.I – Solving Linear Systems
Week 2	September 6 September 8	One.I – Solving Linear Systems One.II – Linear Geometry of n -Space
Week 3	September 13 September 15	One.III – Reduced Echelon Form One.III – Reduced Echelon Form
Week 4	September 20 September 22	Two.I – Definition of Vector Space Two.II – Linear Independence
Week 5	September 27 September 29	Two.III – Basis and Dimension Exam I
Week 6	October 4 October 6	Two.III – Basis and Dimension Three.I – Isomorphisms
Week 7	October 11 October 13	Three.I – Isomorphisms Three.II – Homomorphisms
Week 8	October 18 October 20	Three.II – Homomorphisms Three.III – Computing Linear Maps
Week 9	October 25 October 27	Three.III – Computing Linear Maps Three.IV – Matrix Operations
Week 10	November 1 November 3	Three.IV – Matrix Operations Exam II
Week 11	November 8 November 10	Three.V – Change of Basis Four.I – Definition of Determinants
Week 12	November 15 November 17	Four.I – Definition of Determinants Four.II – Geometry of Determinants
Week 13	November 22 November 24	Four.II – Geometry of Determinants NO CLASS
Week 14	November 29 December 1	Five.I – Complex Vector Spaces Five.I – Complex Vector Spaces
Week 15	December 6 December 8	Five.II – Similarity Five.II – Similarity