

Class Syllabus
MTH 525, Modern Algebra II
Section 22005204, PE 226, 5-6:15 PM, MW
Dr. Ken W. Smith
Fall 2006

A critical course

This course, despite the title, is really a *second* course in linear algebra. It is an introduction to “abstract” linear algebra. As an undergraduate student, you most likely took a first course in linear algebra which emphasized the solutions of systems of linear equations, row reduction of matrices, properties of nonsingular matrices and an introduction to vector spaces, concentrating on vector spaces over the real numbers. In this class, we will look at vector spaces as abstract objects and study linear transformations which act on vector spaces (vector space homomorphisms). We will attempt to classify linear transformations. Toward the end of the course, we will introduce the concept of inner product, a natural generalization of the “dot product” of vectors.

This course is a significant course, often taken by graduate students in their first year. The concepts of this course appear in *every* area of mathematics, including statistics, applied math and computer science!

Here are details about the mechanics of this course.

Textbook: *Linear Algebra*, by Hoffman & Kunze, 2nd edition.
(We will cover most of chapters 1 through 8. Much of chapters 1 and 2 should be a review of your first linear algebra course.)

Prerequisites: MTH 523 (Modern Algebra).

We will assume basic concepts from groups, rings and fields.

Contact information

My e-mail address is Ken.W.Smith@cmich.edu. Please feel free to contact me by email. My office is PE 221; phone: 774-6521.

Office Hours

My formal office hours are: **3-4 MTWR** and **1-3 on Friday**. (However, those hours are likely to be taken up by calculus students – I have 85+ students in two sections. Feel free to make an appointment for other times....)

I will provide course material on my webpage at <http://www.cst.cmich.edu/users/smith1kw/>. (Follow the link to linear algebra.)

Class expectations

Please treat this class as you would other *professional* obligations. If you are unable to attend class, I expect you to contact me as soon as possible (by email or phone) and let me know you will absent.

Assignments and Exams

There will be **daily reading assignments**, along with **daily exercises** to work.

There is a **weekly assignment**, which *is* collected. On the weekly assignment, the clarity and presentation of your work is *very* important. Each assignment problem should be done on a separate sheet, with work clearly shown and English sentences explaining the process. (Assume the audience for your writing is a colleague in the class who does not understand the recent material.) Your writing should communicate the techniques involved in the problem.

Weekly assignments are designed to develop understanding. They may require a fair amount of thinking and “meditating” on the subject. Please set aside enough time to do these assignments well! (I will *not* answer questions on the assignments on the day they are due.)

There are two exams. They are on the **Monday, October 16**, 5-6:30 PM, and **Monday, December 11**, 5-6:50 PM.

I reserve the right to give short quizzes. (Usually, if everyone is keeping up with their work, I will *not* be giving quizzes.)

Grades

Your grade is just an accumulation of points, primarily assignments and exams. All points are equal. (An exam with 150 points, say, is worth ten assignments each of 15 points.) Grades are then based on percentages -- roughly 90 percent and up is an A/A-, 80% and up is a B+/B/B-, 65% and up is C+/C/C-. A grade below 65% is failing (E). (There are no *D* grades.)

Collaboration, Plagiarism, Working with Others

On assignments, homework, or “take home” quizzes, it is acceptable to receive tutoring from your instructor (me.) You are also *encouraged* to discuss the problems with other students. However, anything you turn in must be in *your* own words, with *your* understanding of the material. To turn in material that is written in someone else’s words is *plagiarism*.

In the academic and scientific community, unless explicitly stated otherwise, it is often assumed that submitted work involves two types of ideas: (1) concepts well-known to everyone in the field and (2) the ideas of the author. *Ideas of other people, if used, must be referenced.* A typical reference might be “The idea in the third paragraph was suggested by Jane Doe.”

In this course we will assume that material covered in class is “well-known.”. You may also assume suggestions from me, say, in my office hours, is also common knowledge. But significant assignment help from other faculty or students should be referenced. Using someone else’s ideas, *without referencing them, is also considered plagiarism.*

Plagiarism, in professional circles, may lead to penalties as minor as a public printed apology or as major as job termination and expulsion from a professional society.

Please note that plagiarism need not involve deliberate deceit. (Deliberate deceit - "cheating" -- is dealt with severely, in the classroom and in the professional organizations.)

Writing

Mathematicians should write well. Please don't abbreviate (unless we have agreed on some common abbreviations). Please write with good grammar, in complete sentences. Spell correctly. Write so that others will find your work easy to read.

I will try to help you improve your math writing.

Final comment

Please feel free to talk to me. I want you to enjoy this class *and* to do well!

Dr. Ken W. Smith (ken.w.smith@cmich.edu)