

SYLLABUS FOR MATH 221/2-LEC[4158]

Introduction to Linear Algebra

Fall 2009

MW.....4:00pm- 5:15pm (MP 104)

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Office Hours: M 1:45-2:45PM, W 2:45-3:45 PM and/or by appointment

Textbook: *Linear Algebra and Its Applications*, by D. C. Lay, Addison-Wesley, Third Edition, 2003.

COURSE OUTLINE

Chapter 1 (Sections 1.1 → 1.9)

Chapter 2 (Sections 2.1 → 2.3)

Chapter 4 (Sections 4.1 → 4.6)

Chapter 3 (Sections 3.1 → 3.2)

Chapter 5 (Sections 5.1 → 5.3)

Chapter 6 (Sections 6.1 → 6.4)

GRADING POLICY

Your grade in this course will be based on two in-class midterm exams, a comprehensive final exam, homework problems (I collect each Monday problems assigned during the previous week) and quizzes. These will have the following weights:

| | Weight | Examination Date |
|----------------------|--------|--------------------------|
| Homework and quizzes | 30% | Due every Monday |
| Exam 1 | 20% | Oct. 12, Monday |
| Exam 2 | 20% | Nov. 9, Monday |
| Final Exam | 30% | MON, DEC 21 3:30-5:30 PM |

Letter grades for the course will be based on your total score(S) which is the weighted sum of scores in the two midterm exams, homework, and the final exam:

| Score (S) | $85 < S \leq 100$ | $75 < S \leq 85$ | $65 < S \leq 75$ | $50 < S \leq 65$ | $0 \leq S \leq 50$ |
|---------------|-------------------|------------------|------------------|------------------|--------------------|
| Grade | A | B | C | D | F |

The grading system may be changed for the entire class or in individual cases at the discretion of the instructor. In particular, **class attendance and participation will be taken into account.**

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory.

Learning Goals

By the end of this course, you should:

- understand and remember the key ideas, concepts, definitions, and theorems of the subject,
- be able to apply mathematical theorems and computational algorithms correctly to answer questions, and interpret their results correctly, including potentially non-unique solutions or breakdowns of algorithms,
- be able to choose the most useful theorem or most efficient computational algorithm in a particular analytical or computational circumstance,
- appreciate the power of mathematical generalization (or abstraction) and understand how mathematical theory is developed,
- have enhanced your ability to communicate mathematical ideas and algorithms orally and in writing,
- have enhanced your ability to learn mathematics by reading mathematics books.

To achieve these goals, you should:

- preview each section before it is covered in the class,
- come to every class and ask questions,
- read the section in the text before attempting to work out its exercises; and read it again if necessary,
- form and participate in a study group,
- try hard to work out each exercise by yourself first; discuss it in a study group if necessary; and ask the instructor to show how it is done as a last resort only after the assignment is handed in,
- do and hand in each assignment on time.

**MATH 221 - 2-LEC[4158]
HOMEWORK ASSIGNMENTS**

IMPORTANT: You are expected to attempt to solve all the problems listed below. **However, you are required to turn in only the starred problems for grading.** These will be collected at the **beginning** of the class every Tuesday unless instructed otherwise.

Assignment 1

- 1.1 1, 3*, 6*, 7, 10*, 11, 12*, 13, 16*, 19, 21, 23*, 24*, 26*
- 1.2 1, 5, 10*, 16*, 17, 19, 21*, 22*, 23*, 24*, 25

Assignment 2

- 1.3 5, 9, 12*, 14*, 17, 19, 23*, 24*, 25, 27, 29
- 1.4 9, 11, 15*, 17, 21, 23*, 24*, 25, 27*

Assignment 3

- 1.5 3, 8*, 9, 14*, 15, 21*, 23*, 24*, 25, 27, 27
- 1.7 9, 11, 12*, 14*, 17, 21*, 22*, 25, 27*, 28*, 31, 33

Assignment 4

- 1.8 5, 7, 10*, 12*, 13, 18*, 19, 23*, 24*, 25, 27*, 29, 32*, 33
- 1.9 1, 5, 8*, 9, 13*, 15, 19, 22*, 23*, 24*, 25, 26*, 32*

Assignment 5

- 2.1 1, 3, 5, 10*, 12*, 15*, 16*, 19, 22*, 25, 27
- 2.2 7, 9*, 10*, 11, 13, 15, 16*, 18, 19, 25, 32*, 35*, 37

Assignment 6

- 2.3 3, 5, 6*, 8*, 11*, 12*, 13*, 17, 19, 22*, 25, 29, 34*
- 4.1 3, 7, 9, 11, 13*, 15, 21, 22*, 23*, 24*, 25, 27, 28*, 29, 32*

Assignment 7

- 4.2 3, 6*, 8*, 11, 15, 15, 17, 21, 24*, 25*, 26*, 27, 31*, 31, 33
- 4.3 3, 5, 7, 9, 14*, 16*, 19, 21*, 22*, 24*, 26*, 32

Assignment 8

- 4.4 3, 8*, 11, 13, 15, 16*, 17, 21, 24*, 27, 30*, 35, 36*
- 4.5 3, 5, 8*, 11, 14*, 17, 19*, 20*, 21, 24*, 29*, 30*

Assignment 9

- 4.6 4*, 7, 11, 14*, 15, 17*, 18*, 19, 21*, 25*, 28, 29, 31
- 3.1 7, 9, 14*, 17, 20*, 22*, 25, 31, 35, 37, 39*, 40*, 42*

Assignment 10

3.2 1, 3, 7, 10*, 11, 16*, 19, 21, 25, 26*, 27*, 28*, 33, 40*

Assignment 11

5.1 1, 5, 8*, 11, 14*, 16*, 17, 19, 21*, 22*, 23, 26, 27

5.2 3, 5, 8*, 9, 11, 14*, 16*, 17, 18*, 21*, 22*, 24, 26

Assignment 12

5.3 1, 4*, 5, 7, 9, 11, 14*, 20*, 21*, 22*, 23, 26*, 29

6.1 1, 5, 7, 11, 14*, 15, 18*, 19*, 20*, 23, 26*, 29, 30*

Assignment 13

6.2 1, 5, 10*, 12*, 13, 15, 19, 22*, 23*, 24*, 25, 27, 29*

6.3 1, 5, 8*, 10*, 11, 14*, 15, 17, 18*, 19, 21*, 22*, 23

Assignment 14

6.4 1, 3, 4, 6, 9, 17, 19