MA 221 01, SP15 Syllabus
Linear Algebra

<u>Course Objectives</u>: This course introduces students to the basic concepts of linear algebra: vector spaces, linear independence, dimension, linear transformations, and eigenvectors/ eigenvalues; and some of its many applications. Matrices with and without MATLAB are used for many, but not all, computations. You will extend your ability to develop and write proofs that was begun in MA120.

<u>Class Schedule</u>: Monday, Thursday 1:00 – 2:15 p.m., HH211.

<u>Instructor</u>: B. Gold, <u>Office</u>: HH247, <u>Office Telephone</u>: 732-571-4451

<u>E-mail Address</u>: bgold@monmouth.edu

<u>Office Hours</u>: Monday 11:30 – 12:30, Tuesday 12:45 – 1:45, Wednesday 4:30 – 5:30, Thursday 4:30 – 5:30; or by appointment or chance.

<u>Required Text</u>: Lay, *Linear Algebra and Its Applications*, Addison Wesley, **4th ed**. 2012

<u>Course Requirements</u>: Pre-class reading questions, homework assignments, definition quizzes, application presentation, three in-class examinations, cumulative final examination. Each day you must read the section for that day *before* class, and e-mail me, **no later than noon**, the answer to the day's T/F reading question, stating, for each part, whether the statement is true or false, what page of the book the answer is on, and a one sentence explanation (which can be a quote from the book).

<u>Methods of Evaluation and Grading Policy</u>: The grade comes 5% from pre-class reading questions, 15% from daily homework assignments, 2% from definitions quizzes, 11% from the application presentation, 25% from the final exam, and 14% from each in-class exam.

On a scale of 0 to 100, grades of:

    A and A- will be assigned to scores of 90 and above

    B+, B and B- will be assigned to scores between 80 and 90

    C+, C and C- will be assigned to scores between 65 and 80

    D+, D and D- will be assigned to scores between 50 and 65

    F will be assigned to scores below 50.

<u>Attendance Requirement</u>: Students are expected to attend class unless they have a valid excuse: only with a valid excuse will late work be accepted.

<u>Examination Absences</u>: **If you must miss an examination or quiz, you must let me know, by telephone, e-mail, or in person, before the examination, or the grade on the examination will be 0, with no exceptions!** Further, you must speak with me before the next class period to determine a time for a make-up examination.

<u>Last date to Withdraw with automatic assignment of "W" grade</u>: March 30, 2015.

<u>Statement on Academic Honesty</u>: *Whenever you have had assistance with a problem, or worked with any other student, you must acknowledge who you worked with* at the beginning of the solution to the problem. In courses for mathematics majors, I often get too much whole-class homework. If I get two papers that are identical (and so clearly haven't been written up separately) or where the errors are identical but <u>joint work isn't acknowledged</u>, I will give both students a 0 for that homework assignment, and for the second such incident, will report it to the University Disciplinary Committee.

Examination Rules: No student is permitted to have at his or her desk any books or papers that are not given out or expressly permitted by the instructor. Possession of such material will be regarded as evidence of intent to use the information dishonestly. No communication between students during the examination is permitted. If there are questions, or if there is a need for additional material, the instructor should be asked. In accordance with the academic honesty policy of Monmouth University each exam will contain the following pledge:

"I, _____, certify that I have read the above rules for examinations, and that I have abided by them. By signing, I affirm that I have neither given nor received aid during this examination, and I understand that violation of this affirmation may result in suspension or expulsion from Monmouth University."

Statement on Special Accommodations: Students with disabilities who need special accommodations for this class are encouraged to meet with me or the appropriate disability service provider on campus as soon as possible. In order to receive accommodations, students must be registered with the appropriate disability service provider on campus as set forth in the student handbook and must follow the University procedure for self-disclosure, which is stated in the University *Guide to Services and Accommodations for Students with Disabilities*. Students will not be afforded any special accommodations for academic work completed prior to the disclosure of the disability, nor will they be afforded any special accommodations prior to the completion of the documentation process with the appropriate disability office.

Tentative Schedule (may be changed during the course of the semester):
NOTE: If a problem is in **boldface**, you are to use **MATLAB** to do the problem. However, you should still write out the conclusions you draw on your homework paper.

Date	Section	Reading q.	Homework assignment, due at the **following** class
1/22	1.1		6, 8, 10, 12, 16, 18, 22, 24, 26, 32
1/26	1.2	22abe	2, 4, 10, 12, 14, 16, 18, 20
1/29	1.3	24	2, 4, 6, 10, 12, 14, 16, 18, 20
2/2	1.4	24abcd	4, 10, 12, 14, 16, **18**, 20, 22, 26, 30, **38**, **40**
2/5	1.5	24abce	2, 4, 6, 10, 12, 14, 16, 18, 20, 30
2/9	1.7	22	2, 4, 6, 8, 10, 12, 16, 18, 20, 34, 36
2/12	1.8	22abde	4, 6, 8, 10, 12, 14, 16, 20, 32, 34, **38**
2/16	1.9	24abd	2, 4, 6, 10, 14, 16, 18, 20, 26, 28, **38**, **40**
2/19	Exam 1		Sections 1.1 through 1.8
2/23	2.1	16abde	2, 4, 6, 8, 18, 27, 28, <u>and</u> find the transpose of matrices A and B in problem 6
2/26	2.2	10abce	2, 6, 8, 14, 16; then do 30 using the method of page 108, by hand, and **36** using that method and Matlab

Date	Section		Problems
3/2	2.3	12	2, 4, 6, 8, 14, 18, 24
3/5	4.1	24abcd	2, 10, 14, 21, 26, 28
3/9	4.1		6, 8, 12, 16, 18, 32 first part: H∩K is a subspace of V
3/12	4.2	26	2, 4, 6, 8, 10, 12, 14, 16, 18, 20
3/14 – 3/22			Spring recess
3/23	4.2		22, 24, 30, 32, 34, 36, **38**
3/26	Exam 2		Sections 1.9, 2.1 through 2.3, 4.1
3/30	4.3	22abcd	2, 4, 6, 8, 10, 12, 14
4/2	4.3		16, **18**, 20, 24, 26, 34
4/6	4.4	16	2, 4, 6, 8, 10, 12, 14, 28, 30, 32
4/9	4.5	20acde	2, 4, 6, 8, 10, 12, 14, 22, 30
4/13	4.6	18	2, 4, 6, 10, 12, 14, 16
4/16	5.1	22abde	2, 4, 6, 8, 12, 14, 18; then do **18** again using Matlab
4/20	5.2	22	2, 4, 6, 8, 16
4/23	Exam 3		4.2 – 4.6, 5.1
4/27	Application reports		
4/30	Application reports		
5/4	Application reports		

Notes to Students: MA120 and MA125 are prerequisites for this course. I expect you to remember and be able to use basic derivative rules, do direct proofs using methods from MA120, and be familiar with the idea of proof by contradiction, which you will get much better at since we will use it often in this course.