SYLLABUS FOR MA 242, SUMMER 2007

Professor:	Maciej Szczesny
Office:	MCS 236
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Office Hours:	TTh 1-2
Lecture:	PSY B35, TTh 3:30-5
Discussion:	PSY B47, M 1-2

Text: D. Lay, *Linear Algebra and its applications* (Third Ed), Addison Wesley, 2003.

Homework: Homework will be assigned every day. You will be asked to hand in a subset of the problems at the end of the week. Late homework will not be accepted. However, your lowest homework grade will be dropped.

Quizzes: There will be a quiz every other day. The problems will closely follow those in the homework. No make-up quizzes will be given. However, your lowest Quiz grade will be dropped.

Exams: There will be two in-class exams and a final exam at the end. The dates are as follows:

Exam I	Thursday, Oct 2
Exam II	Thursday, Nov 13
Final Exam:	Saturday, Dec 20, 3-5.

Note: No calculators, books, notes, or cellphones are allowed during exams/quizzes.

No make up exams will be given, with the exception of serious illness, in which case you will be required to provide a note from a physician.

Grading Policy:

Homework:	10 %
Quizzes:	20 %
In-class Exam I:	20 %
In-class Exam II:	20 %
Final:	30 %

The minimum final grades based on the above breakdown are guaranteed to be as follows: **A** 90-100 %, **B** 80-89, **C** 70-79, **D** 60-69.

Academic Honest: You are encouraged to discuss homework problems with other students. However, your write-ups should ALWAYS be your own. If you are caught plagiarizing, you will be referred to the University Academic Standards Committee for disciplinary action.

Standards of Civilized Behavior: Lecture is a time devoted to learning. Activities which interfere with this process will not be tolerated. Please turn off your cell-phone before coming to class.

Overview: This is really a course in geometry - the geometry of lines, planes, and their higher dimensional analogues, so called *linear subspaces*, as well as the transformations that preserve these objects. These lines, planes etc. are described by systems of linear equations (equations where all variables occur to at most the first power), and so solving systems of equations is equivalent to studying how linear subspaces intersect.

For example, the system of 2 equations in 3 unknowns

$$\left\{ \begin{array}{ll} 2x + 3y - 4z & = 2 \\ x - y + 5z & = -2 \end{array} \right\}$$

describes two planes intersecting in three-dimensional space. What does the intersection look like ? How do you describe it geometrically ? We will learn to answer these questions, and develop algebraic algorithms that aid in their resolution.

Material to be covered: The plan is to cover the first six chapters of the textbook, as well as sections 7.1 and 7.2. The main topics are:

(1) Systems of linear equations
(2) Matrices - invertibility, rank, nullity, etc.
(3) Determinants
(4) Vector spaces
(5) Eigenvalues, eigenvectors, and diagonalization
(6) Orthogonality and inner product spaces
(7) Symmetric matrices and quadratic forms