Math 220 — Introduction to Linear Algebra (Fall 2013)

Section	**2**
Time	Tu-Thu 1:25–2:15 pm
Location	Fulmer 201
Instructor	Bala Krishnamoorthy
Office	Neill 325
Office Hours	Tue 3:00–4:00 pm, Wed 2:30-4:00 pm
Email	bkrishna@math.wsu.edu
Course web page	http://www.wsu.edu/∼kbala/Math220.html
Book	David C. Lay —
	Linear Algebra and its Applications, Fourth edition.
	ISBN: 0321385179; **Make sure you get access to mymathlab.com**
	Online version of the text is available with this access
References	Gilbert Strang —
	Introduction to Linear Algebra, Fourth edition.
	ISBN: 0980232716, Strang's class at MIT

Description of the Course: This course will present a low-level introduction to the basics of linear algebra and matrix theory. Topics covered include systems of linear equations, determinants and matrix inverses, rank, eigenvalues, and eigenvectors. Discussions will be limited to real numbers and real spaces. The software package MATLAB will be used to implement and explore some of the ideas discussed in class as part of computer projects.

Organization and Grading: Around twelve (12) homework assignments will be given, which are to be **completed online** at mymathlab.com. Topics relevant for each assignment will be covered at least one week before the day on which it will be due (dates are given in the tentative schedule, and are displayed in your account in mymathlab.com). Discussion of homework problems with others is allowed, but each person must submit his or her own solutions, and own work where asked.

There will be a couple of computer projects, which will be given after the midterm exam. These projects will involve the use of the computer package MATLAB.

It is very important to work sincerely on the homework problems if you want to do well in this course. **Homework should be submitted before the deadline, which is 11:59 pm on the date it is due. Late homework submissions will incur a 25% penalty.** If you have any genuine difficulties turning in homework on time, you could discuss it with me well before the due date. The lectures will follow the material presented in the book, but the treatment may differ from that given in the text on a few occasions. I encourage you **not to miss any of the lectures. Following the material covered in class is very important** to do well in the homework assignments and in the exams.

There will be one midterm exam and a final exam. Both of them will be in-class, closed book, and closed notes exams. The final will be a comprehensive exam (i.e., will cover material

discussed in the whole course). The midterm exam is scheduled for **Thursday, October 3**, in class. The *total score* for the course will be calculated using the following weights:

- homework - 25%
- mid-term - 30%
- computer projects - 10%
- final exam - 35%.

Your overall grade for the course will be determined by your total score, based on the following scale: 93–100: A, 90–92.9: A−, 87–89.9: B+, 83–86.9: B, 80–82.9: B−, 77–79.9: C+, 73–76.9: C, 70–72.9: C−, 67–69.9: D+, 60–66.9: D, 0–59.9: F.

Academic Integrity: Plagiarism or cheating will not be tolerated. Such behavior will result in a zero grade for the graded item and possibly a failing grade for the entire course. Discussion of homework problems with others is allowed, but each person must submit his or her own solutions. Check out conduct.wsu.edu/academic-integrity-policies-and-resources to learn more on this topic.

Students with Disabilities: Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, please visit the Access center. All accommodations MUST be approved through the Access Center (Washington Building, Room 217). Please stop by or call 509-335-3417 to make an appointment with a Access Advisor.

WSU Safety Measures: Washington State University is committed to maintaining a safe environment for its faculty, staff, and students. Please visit safetyplan.wsu.edu and oem.wsu.edu/emergencies to access the Campus Safety Plan and emergency information. You should also become familiar with the WSU Alert Site (alert.wsu.edu) where information about emergencies and other issues affecting WSU will be found.

Technology and Computer Assignment: Most of the homework problems could be done by hand. A calculator might be useful for doing some of the work, but I will encourage you **NOT** to use one. **Calculators will NOT be allowed in the exams**.

There will be two projects involving the use of the package MATLAB. You can access MATLAB at any of the computer labs in Neill Hall, or through the mymath page - http://my.math.wsu.edu. You will be asked to log in using your WSU ID. Check under "Software" to run MATLAB (and other packages).

Tentative Schedule for Math 220

N.B.: Sections from the text given under Details. Section(s) from which problems are due for each homework are indicated in braces.

Week	Lec #	Date	Details
1	1	Tue, Aug 20	systems of linear equations (1.1)
	2	Thu, Aug 22	1.1, row reduction, echelon forms (1.2)
2	3	Tue, Aug 27	reduction, echelon forms (1.2)
	4	Thu, Aug 29	vector equations (1.3) **[HW 1 Due (1.1)]**
3	5	Tue, Sep 3	matrix equations (1.4)
	6	Thu, Sep 5	solution sets of linear systems (1.5) **[HW 2 Due (1.2,1.3)]**
4	7	Tue, Sep 10	linear independence (1.7)
	8	Thu, Sep 12	1.7, linear transformations (1.8) **[HW 3 Due (1.4,1.5)]**
5	9	Tue, Sep 17	linear transformations (1.8)
	10	Thu, Sep 19	matrix of linear transformation (1.9) **[HW 4 Due (1.7,1.8)]**
6	11	Tue, Sep 24	applied linear models (1.10), matrix operations (2.1)
	12	Thu, Sep 26	inverse of a matrix (2.2) **[HW 5 Due (1.9,1.10)]**
7	13	Tue, Oct 1	invertible matrices (2.3)
	14	Thu, Oct 3	**Midterm exam, in-class**
8	15	Tue, Oct 8	*(no class)*
	16	Thu, Oct 10	2.3, subspaces of $\mathbb{R}^n$ (2.8) **[HW 6 Due (2.1,2,2)]**
9	17	Tue, Oct 15	2.8, dimension and rank (2.9, 4.5)
	18	Thu, Oct 17	dimension and rank (2.9, 4.5) **[HW 7 Due (2.3,2.8)]**
10	19	Tue, Oct 22	intro to determinants (3.1)
	20	Thu, Oct 24	3.1, properties of determinants (3.2) **[HW 8 Due (2.9,4.5)]**
11	21	Tue, Oct 29	properties of determinants (3.2) **[HW 9 Due (3.1)]**
	22	Thu, Oct 31	*(no class)*
12	23	Tue, Nov 5	5.1, characteristic equation (5.2)
	24	Thu, Nov 7	5.2 **[HW 10 Due (3.2)]**
13	25	Tue, Nov 12	5.2
	26	Thu, Nov 14	more on eigenvalues **[HW 11 Due (5.1)]**
14	27	Tue, Nov 19	inner product, length, orthogonality (6.1)
	28	Thu, Nov 21	orthogonal sets (6.2) **[HW 12 Due (5.2)]**
15		Tue, Nov 26	*T'giving break*
		Thu, Nov 28	*T'giving break*
16	29	Tue, Dec 3	Gram-Schmidt orthogonalization (6.4)
	30	Thu, Dec 5	review for final **[Project due]**
17		Tue, Dec 10	**Final exam (7:00–9:00 pm)**