

Course: Math 2B Section: 07

Instructor: Frank P. Soler

Term: Winter 2017

Office: S76f. Office hours: MTWTh 9:30 – 10:20 AM or by appointment

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Pre-requisite: C or better in Math 1D.

Textbook and other materials

Book: “*Elementary Linear Algebra (applications version)*”, 10th Edition, by Anton and Rorres, John Wiley publisher, 2010. ISBN: 978-0-470-43205-1

Calculator: Any scientific calculator that can perform numerical (**not symbolical**) matrix operations.

Student Learning Outcomes

- (1) Construct and evaluate linear systems/models to solve application problems.
- (2) Use appropriate linear algebra concepts, methods, and algorithms in order to formulate theoretical and applied approaches.
- (3) Apply theoretical principles of linear transformations, matrix algebra, and vector spaces.

Attendance. In most cases, attendance is a necessity. I don't take roll. If you will be absent during an extended time period, please contact me. It is important to keep an accurate set of class notes.

Quizzes. Unannounced. Usually given at the beginning of class. Missed quizzes are not made up. Note that some quizzes may be of the take-home variety (these will be due at the beginning of class on the next class day – no late papers will be accepted). Lowest quiz is dropped. Quizzes may be cumulative and are based on lecture examples and/or assigned practice problems. In-class quizzes are **closed book** but **open notes**. You may use your calculator.

Homework. Assigned but not collected. Consider doing at least all the assigned problems on a daily basis (see schedule of *Practice Problems*). The problem sets are designed to guide the student through graphical, numerical, and symbolic approaches. There is such a variety of problems in the exercise sets that a few lecture examples can't illustrate every type of question. Thus, reading the textbook, especially the worked out examples, becomes of vital importance. You are all advanced math students and are aware that falling behind is ill conceived. Keeping up with the reading, the daily lectures, and the practice problems will take up to 2 hours per day.

Lab projects. There will be five application/lab type projects. (see the calendar for when they are due). I will hand them out well before the due date. For some of them, class time will be provided. Barring extreme circumstances (typically cleared with me ahead of time), please note that **late papers are not accepted.**

Exams. Two midterms and a final (see the calendar for dates). Missed exams are not made up. The **Final Exam** is comprehensive and it is required. Any student not taking the **Final Exam** automatically receives a grade of F for the course. You may use your calculator for all exams. Aside from your calculator, no iPad, iPhone, cell phone, computer, or any other electronic device is allowed and should be turned off. For the multiple choice part of the **Final Exam** the students must bring a half-scantron (brown or green) and a #2 pencil. The midterms and the final are **closed book and closed notes**. However, for each midterm, the student is allowed to bring one 8.5 by 11 piece of paper, written on both sides, of notes. For the final exam, the student may bring up to three 8.5 by 11 pieces of paper, written on both sides.

Grading. Based on total points accumulated as follows:

Two Midterm Exams (100 pts. each) = 200 pts.; **Quizzes** = 100 pts.; **Labs**: 100 pts.; **Final Exam** = 200 pts.

The lowest 100 point score between the two midterms and the quizzes will be dropped (note: lab/projects scores and the score on the final exam will **NOT** be dropped). The letter grade scale is:

A+ = 94%; A = 87%; A- = 85%; B+ = 83%; B = 76%; B- = 73%; C+ = 70%; C = 62%; D+ = 58%; D = 50%; F < 50%.

Miscellaneous Comments. This is a fairly rigorous course combining applications and theory (in the ratio 75% to 25%). For tutorial assistance register in **S-4 (Math/Science Tutorial Center)** ASAP. Pay close attention to drop dates. **I do not drop students. In other words, a student's name appearing on the final grade roster and who has not been involved in course activities, will automatically receive a final grade of F for the course.** There are many websites that facilitate matrix computations and other algorithms we will talk about (i.e., Gram-Schmidt orthogonalization, eigenvalues/eigenvectors computations, etc.). Familiarize yourself with some of these and use them, as needed, when working on practice problems. Also, the MIT video series on Linear Algebra, hosted by Professor Gilbert Strang, one of the leading linear algebraists in the nation, is available online and well worth watching. (each video/ lecture is about 40 minutes long).

Practice Problems

Students should work the indicated problems for class discussion and studying purposes (quizzes, exams). If a student has a question about any other problem in the exercise set but **NOT** assigned as practice, please come to my office hours and I will be happy to help you.

<u>Chapter.section</u>	<u>Problems</u>
1.1	5; 10; 12; 14; 15
1.2	2; 4, 6; 13; 25
1.3:	3c, e, g, k; 4f, h, k; 11; 13a; 21; 23a, c; 30
1.4:	3; 4; 10; 12; 14; 18c, e; 25; 28; 30; 35; 40; 54
1.5	2; 4; 6a, b; 7a, b; 10; 14; 25a, b; 32; 38
1.6:	2; 6; 10; 15; 18; 23
1.7: `	2 – 6; 10; 18; 20; 26; 43
2.1:	2; 3; 6; 12; 16; 22; 32; 41
2.2	4; 5; 8; 10; 14; 20; 24; 28; 34
2.3	4; 6; 8; 10; 12; 18; 20; 24; 36
4.1	2; 4; 5; 8; 14
4.2:	1; 2; 8; 11; 12
4.3	2; 4; 6; 8; 12
4.4:	2; 4; 6; 8; 12
4.5:	2; 4; 6; 8; 12; 16; 20a, b
4.6:	2a, b; 3; 5a; 6; 8; 10; 12; 16
4.7:	2 – 4; 6a, d; 8; 12a, c; 14
4.8:	2a, b, c; 4; 6; 7; 8; 14; 16
4.9:	2; 4; 5a, d; 6a, d; 8a, b, c; 10a, c; 12a, b; 14; 16; 17; 22a, b
4.10:	4; 5a; 6a, b; 12a, c; 14a, d; 30
6.1:	1; 4; 7; 8
6.2:	1e; 2; 5; 6; 8; 12; 14; 16a, b
6.3:	2; 4; 10; 12; 14; 22a; 28
6.4:	1; 2; 4a; 6a; 7a; 8
5.1:	2; 3; 4; 6a, c, f; 8a, c, f; 9b; 12a, b; 14; 16a; 23
5.2:	2; 3; 4; 6; 8; 10; 12; 14; 18; 22
7.1:	2; 3a, c; 6; 12
7.2:	1c; 2; 6; 14; 16a, c
7.3:	1; 4; 6; 10a

Winter 2017 tentative daily calendar for Math 2B

Legend: month/day: chapter.section(s) or activity

<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>
1/9: Intro	1/10: 1.1	1/11: 1.2-1.3	1/12: 1.3	1/13: <i>Lab 1 due</i>
1/16: No classes	1/17: 1.4	1/18: 1.5	1/19: 1.6	1/20: 1.7
1/23: 1.8	1/24: catch-up	1/25: 2.1	1/26: 2.2	1/27: <i>Lab 2 due</i>
1/30: 2.3	1/31: catch-up	2/1: 4.1	2/2: Review	2/3: Midterm 1 on Chs. 1, 2
2/6: 4.2	2/7: 4.2	2/8: 4.3	2/9: 4.4	2/10: 4.5
2/13: 4.6	2/14: 4.6	2/15: 4.7	2/16: 4.8	2/17: No classes
2/20: No classes	2/21: 4.8	2/22: 4.9	2/23: 4.9	2/24: <i>LAB 3 due</i>
2/27: 4.10	2/28: catch-up	3/1: 6.1	3/2: Review	3/3: Midterm 2 on Ch. 4
3/6: 6.2	3/7: 6.3	3/8: 6.4	3/9: 6.4	3/10: <i>Lab 4 due</i>
3/13: 5.1	3/14: 5.2	3/15: 7.1	3/16: 7.2	3/17: 7.3
3/20: TBA	3/21: TBA	3/22: TBA/Review	3/23: Review	3/24: <i>Lab 5 due</i>
3/27: Final Exam from 7 to 9 AM. Bring small Scantron				

Important dates:

Monday, January 16: no classes (Martin Luther King's birthday)

Saturday, January 21: last day to add quarter-long classes

Sunday, January 22: last day to drop for a full refund or credit; last day to drop a class with no record of grade

Friday, February 3: last day to request pass/no pass grade from the Registrar.

Friday, February 17: no classes (President's weekend)

Monday, February 20: no classes (President's weekend)

Friday, March 3: last day to drop with a "W".

Monday through Friday, March 27-31: week of Final Exams.

Friday, March 31: last day to file for a winter degree or certificate