MATH 2B   SECTION 3   CRN 01243   WINTER 2019

Instructor: **Dr. Zack Judson**   **Office:** E36B

Office Hours: MWF 9:30-10:20   TTh 12:30-1:20

Email: judsonzack@deanza.edu   (Note: I will not answer Math questions over email)

Prerequisite: Math 1D or an equivalent course

Required Materials
    1) "Elementary Linear Algebra," 11th edition by Howard Anton
    2) Calculator: TI83/84 graphing calculator or similar
                    TI89 or any calculator with a CAS will not be allowed.
                    Calculators will be required on about half of the tests and quizzes.

Accomodations
    Those of you who need additional accommodations, due to disability, campus-related
    activities, or some other reason, please meet with me during the first two weeks of class
    to discuss your options.

Homework
    As a student of second year college mathematics, you should be aware that the only way
    you will learn mathematics is by doing mathematics. In order to help you study, you will
    be given a list of suggested homework problems. The homework will NOT be collected
    or graded. However, solving these problems is essential for keeping up with the class.
    You are responsible to do **at least** all of the suggested problems. There is a direct
    correlation between your level of comfort with the homework problems and your success
    in this class. Moreover, the exams and quizzes will be of the same spirit as the homework
    and will often contain identical problems. You are expected to work on all the assigned
    problems corresponding to a lecture before you come to the next lecture. You are all
    advanced math students and are aware that falling behind is ill conceived.

Grade
    Your grade will be computed using the following grade distribution.

15%	Labs	15%	Quizzes
30%	Midterms (3)	40%	Final

Midterms

Three exams will be given with no make-ups. If an exam is missed under <u>extreme</u> circumstances and for a very valid reason, an equivalent of the final score will replace the missing exam score. If such extreme circumstances occur it is the students responsibility to inform me immediately and provide documentation of the circumstances.

Quizzes

At the end of every week which does not have an exam, there will be a quiz. The quiz will typically take place at the start of class and will last for about 20 minutes. Quizzes may be cumulative and are based on lecture examples and assigned practice problems. These quizzes will be **closed book** but **open notes** (please see the comments under the homework heading above)**.** There are no early, late, or make-up quizzes; however, your lowest quiz score will be dropped.

Labs

A half dozen times throughout the quarter we will have lab assignments. The intention behind lab assignments is to encourage students to think more deeply about the material. These labs will be worked on in groups of three or four. There will be some initial time allotted to these lab assignments during class, but you will need to work on them outside of class to complete them. Although every student must turn in their own copy of the lab, you will be graded as a group on the assignment. For further information regarding the lab assignments please read the Lab Grading Policies later in this document. No late lab assignments will be accepted. Your lowest lab score will be dropped.

Final Exam

A two-hour comprehensive final exam will be given on Wednesday, March 27 from 7 to 9 am.

Honors

If you are interested in taking the honors section of this course, please come speak to me during the first week of the quarter. In addition to all of the work described above, an honors student will be required to complete an honors project which should require at least 10 hours of additional work. The honors project will represent 10% of your grade, reducing the contribution to your grade of the quizzes and the labs down to 10% apiece.

Grading Scale

Due to the complexity of the material the grading scale we will use is as follows

$$A \ : 90 - 100 \quad B+: 80 - 84 \quad C+: 67 - 69 \quad D: \ 50 - 59 \quad F: 0 - 49$$
$$A-: 85 - 89 \quad B \ : \ 75 - 79 \quad C \ : \ 60 - 66$$
$$B-: 70 - 74$$

Tentative Schedule
Math 1A Winter Quarter 2019

	Monday	Tuesday	Wednesday	Thursday	Friday
January	Introductions 7	Ch. 1.1 8	Ch. 1.2 9	Ch. 1.3 10	Lab 1 Quiz 1 11
January	Ch. 1.4 14	Ch. 1.5 15	Ch. 1.6 16	Markov Chains 17	Lab 2 Quiz 2 18 (lab 1 due)
January	Martin Luther King Jr. Day 21	Ch. 1.7 22	Ch. 1.8 23	Ch. 9.1 Ch. 2.1 24	Ch. 2.1 Quiz 3 25 (lab 2 due)
January/ February	Ch. 2.2 28	Ch. 2.3 29	Discussion 30	Ch. 4.1 31	Midterm 1 (Chapters 1, 2) 1
February	Ch. 4.2 4	Ch. 4.3 5	Ch. 4.4 6	Ch. 4.5 7	Lab 3 Quiz 4 8
February	Ch. 4.6 11	Ch. 4.7 12	Ch. 4.8 13	Ch. 4.8 Quiz 5 14	President's Weekend 15
February	President's Weekend 18	Ch. 4.9 (lab 3 due) 19	Ch. 4.10 20	Ch. 5.1 21	Lab 4 Quiz 6 22
February/ March	Ch. 5.2 25	Discussion 26	Ch. 6.1 27	Midterm 2 (Chapters 4, 5) 28	Ch. 6.2 (lab 4 due) 1
March	Ch. 6.3 4	Ch. 6.4 5	Ch. 7.1 6	Ch. 7.2 7	Lab 5 Quiz 7 8
March	Ch. 7.3 11	Ch. 8.1 12	Ch. 8.2 13	Ch. 8.3 14	Lab 6 (lab 5 due) 15
March	Ch. 8.4 18	Discussion 19	Midterm 3 20	Discussion 21	Exit Survey (lab 6 due) 22
December	 25	 26	**Final** **7:00-9:00am** 27	 28	 29

Important Dates: January   19: Last day to add a class
                  January   20: Last day to drop with no grade on record.
                  February   1: Last day to request Pass/No Pass grade.
                  March   1: Last day to drop with a "W".

Lab Grading Policies

Nobody makes it into a Linear Algebra class without being exceptionally bright. For this reason, you may at some time in the past, have decided that it is easier to work alone than to work with others. This is unfortunate for two reasons:

> 1) The further you go in Math (or any other discipline) the more difficult the material becomes. If you go far enough, no matter how smart you are, you will reach a point that you cannot proceed without help.

> 2) Presumably the end result of your education will be to obtain a job that you enjoy and that will maintain you in a style in which you enjoy. Almost certainly this job will require you to work with others.

The labs we will cover in this class serve two purposes, they allow us to dig deeper into the fertile soil of the Calculus and they provide us the opportunity to develop our co-operative skills. Most of you, at some point after you transfer will take a class where a single group project might be worth as much as one of your midterms. It can be difficult to rely on others for such a large part of your grade.

General Grading: Each lab member is required to turn in their own lab report. Failure to turn in a lab report will result in a 0 for that lab member. There will be no late labs accepted. Each lab will be graded out of 100 points. Except where indicated on an individual lab, I will randomly select different lab reports to assess for each section of the lab. Every member of the lab group will receive the same score for a particular section as the one member whose report I assessed for that section. As a result all labs will be returned to the group rather than the individual members. It is in your best interest to meet with your group outside of class time to make sure that everyone understands and agrees upon conclusions.

Group Size: Groups must consist of three or four people. Groups must be declared on the day a lab is introduced. After the first lab you will have the opportunity to choose your own groups provided that everyone who is present on time on a lab day has the opportunity to join a group with at least 3 members. If this is not the case, I reserve the right to reform groups as needed. You may change lab groups with each lab, but you are not required to do so. All lab days are already on your calendar. If you are not there on a lab day, you may still do the lab as a group of 1, but you will be subject to a 20 point penalty. You may, of course, make arrangements with other members of the class to declare yourself as part of their group on the day groups are declared.

Incompletes: To avoid groups being penalized for a member who does not complete certain sections you will need to indicate whenever your lab is incomplete. You MUST write Incomplete at the top of the front page of your lab and indicate which sections you did not do. Your lab will only be graded out of the sections you completed. Failure to do this may result in a score of 0 for the individual who has an incomplete lab.

Practice Problems

Students should read the section indicated in the schedule **before** the indicated lecture. After the lecture students should work the indicated problems. Please remember that these problems indicate a minimal set and most students would benefit from working many more problems. In Linear Algebra it is important to have a grounding in examples and counterexamples. For this reason, it is important to also answer all of the True-False exercises at the end of each section.

Section 1.1   10, 12, 13, 15, 16, 25
Section 1.2   2, 4, 6, 12, 13, 25, 43
Section 1.3   3, 4, 11, 13, 21, 23, 30
Section 1.4   2, 3, 4, 10, 12, 14, 18, 22, 25, 28, 30, 35, 40, 54
Section 1.5   2, 4, 6, 7, 10, 14, 25, 32
Section 1.6   2, 6, 10, 15, 18, 23
Section 1.7   2, 3, 4, 5, 6, 10, 18, 20, 28, 34
Section 1.8   2, 7, 13, 32
Section 9.1   1, 2, 4, 6

Section 2.1   2, 3, 4, 6, 10, 16, 17, 18, 22, 32, 41
Section 2.2   4, 5, 8, 10, 14, 20, 24, 28, 34
Section 2.3   4, 6, 8, 10, 12, 18, 20, 24, 36

Note: We skip Chapter 3 since the material in this chapter was covered in detail in Math 1C. Make sure you are familiar with the basic results: unit vectors, dot or inner product, cross product, orthogonality, etc.

Section 4.1   2, 4, 5, 8, 14, 21, 22
Section 4.2   1, 2, 8, 11, 12, 13, 16
Section 4.3   2, 4, 6, 8, 12, 22
Section 4.4   2, 4, 6, 8, 10, 12, 17
Section 4.5   2, 4, 6, 8, 12, 16, 20
Section 4.6   2, 3, 5, 6, 8, 9, 10, 12, 16
Section 4.7   2, 3, 4, 6, 8, 12, 14
Section 4.8   2, 4, 6, 7, 8, 14, 16
Section 4.9   2, 4, 5, 6, 8, 10, 12, 14, 16, 17, 22, 24, 40
Section 4.10   4, 5, 6, 8, 12, 14, 30

Section 5.1   2, 3, 4, 6, 8, 9, 12, 14, 16, 17, 23
Section 5.2   2, 3, 4, 6, 8, 10, 12, 14, 18, 22

Section 6.1   1, 4, 6, 7, 8, 38, 45
Section 6.2   1, 2, 5, 6, 8, 12, 14, 16, 29, 33, 41
Section 6.3   2, 4, 10, 12, 14, 20, 22, 24, 26, 28, 29, 43
Section 6.4   1, 2, 4, 6, 8, 10, 15, 16

Section 7.1   2, 3, 6, 8, 12
Section 7.2   1, 2, 6, 9, 14, 16, 18
Section 7.3   2, 4, 5, 6, 10, 16

Section 8.1   1, 6, 7, 10, 12, 23, 25, 28, 30
Section 8.2   1, 2, 4, 7, 19, 22
Section 8.3   10, 12, 14, 15, 16
Section 8.4   1, 2, 4, 5, 7, 8

Student Learning Outcome(s):

*Construct and evaluate linear systems/models to solve application problems.
*Solve problems by deciding upon and applying appropriate algorithms/concepts from linear algebra.
*Apply theoretical principles of linear algebra to define properties of linear transformations, matrices and vector spaces.