

MATH 270B: Mathematical Structures II

Spring, 2020

CSU Fullerton
Section 06: Course #19567

Department of Mathematics
Location/Time: LH 301 MW 11:30-12:45

Instructor: Kimberly Norman

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COURSE DESCRIPTION AND LEARNING GOALS:

This course is part of a two-course series (with Math 270A). These courses are designed to provide a background in discrete mathematics for the computer science major. Math 270B explores linear algebra, including systems of linear equations, matrix algebra, determinants, vectors, and vector spaces.

LEARNING GOALS

By the end of this course, you will ...

- have a deep understanding of linear algebra theorems and computations.
- be able to work with and solve complex ideas and problems in linear algebra.
- apply linear algebra to a wide set of applications.

These skills and ways of thinking will be very valuable to you in your future computer science classes and in your career.

TEXT:

Linear Algebra with Applications by Keith Nicholson. This text will be posted as a .pdf file to Titanium.

COURSE COMMUNICATION:

All course announcements outside of class and individual email are sent through Titanium, which only uses CSUF email accounts. Therefore, you **MUST** check your CSUF email on a regular basis (several times a week) for the duration of the course. I will be online for at least one hour each day during the week, and one hour over each weekend. I will attempt to respond to all questions sent by e-mail within a 24-hour period, *Monday through Friday* and within a 48-hour period on *weekends and holidays*. Please include the words "Math 270B" in the subject line of any emails.

GRADING:

Assignments and exams will be announced in class on a regular basis. If for any reason you cannot attend class, it is your responsibility to ask me or your classmates if any assignments or exams were announced.

Homework (10%): Homework will be assigned on a regular basis through Lyryx (online).

Quizzes (15%): Quizzes will be given roughly once a week. These quizzes may or may not be announced ahead of time. The lowest quiz score will be dropped. **You must be present during the quiz in order to receive a score.** There are no makeups for quizzes.

Midterm Exams (25% each): There will be two midterm exams, scheduled for Feb. 19 and Mar. 25. Any changes to these dates will be announced in class at least one week in advance.

Final Exam (25%): The final exam for this course will be cumulative. See the final exam schedule and plan accordingly.

Make-up Policy: Quizzes cannot be made up after the quiz is given in class. If you know you will be absent, you may arrange to take a quiz early. Exams can be made up **ONLY** in the case of a documented emergency, and **ONLY** if you request a make up exam *before* the scheduled time of the exam.

Evaluation: Final course grades will be based upon the percentage of total points earned throughout the course. Grades will be distributed according to the following (after rounding to the nearest percent):

A+	A	A-	B+	B	B-	C+	C	D	F
98-100%	92-97%	90-91%	87-89%	82-86%	80-81%	77-79%	70-76%	60-69%	0-59%

COURSE POLICIES

ATTENDANCE POLICY:

Students who miss an excessive number of classes before the drop deadline may be dropped from the course. However, if you intend to drop this class, it is your responsibility to do so. Attendance will not be taken on a regular basis, however, failure to attend class will almost certainly result in a lower grade as you will miss lectures, class discussion, and quizzes.

EMAIL/PHONE POLICY:

Email is my preferred method of communication. Emails will usually be answered by the next weekday. Emails must contain the words "Math 270B" in the subject line. All emails must contain your name, and must be written in a professional manner. I will respond to emails within one weekday. You may also contact me by phone during regularly scheduled office hours. I am unable to take calls or messages outside of office hours.

CLASSROOM POLICIES:

Students are expected not to distract or disrupt their fellow classmates. All mobile phones, pagers, or other noisemaking devices must be turned off *before* the beginning of class. Laptop computers are not permitted to be used during class. If you need to leave the classroom during class for any reason, please do so quietly without disturbing your classmates. You are encouraged to participate in classroom discussion, however, any other talking is not permitted during class, even if you are whispering. Any questions during class should be directed to the instructor. Students who talk without permission in class will be asked to leave.

IMPORTANT UNIVERSITY INFORMATION AND STUDENT POLICIES

Visit <http://itwebstg.fullerton.edu/FDC/teaching/syllabus.php> for important information on

- Students with Special Needs
- Academic Dishonesty Policy
- Emergency Preparedness
- Library Support
- Final Exams Schedule
- University Learning Goals (Undergraduate, Graduate, and General Education)
- Degree Program Learning Outcomes

ACADEMIC DISHONESTY

Cheating – obtaining or attempting to obtain credit for work by the use of any dishonest, deceptive, fraudulent, or unauthorized means. Helping someone commit an act of academic dishonesty. (UPS 300.021).

Unacceptable examination behavior – communicating with fellow students, copying material from another student's exam or allowing another student to copy from an exam, possessing or using unauthorized materials, or any behavior that defeats the intent of an exam.

Students who violate university standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the university. Since dishonesty in any form harms the individual, other students and the university, policies on academic integrity are strictly enforced. I expect that you will familiarize yourself with the academic integrity guidelines found in the current student handbook.

IMPORTANT DATES:

February 4 (Tuesday): Last day for students to ADD with a permit. All permits expire at midnight on February 4. Last day for students to DROP without a grade of "W". Students drop using Titan Online.

February 17 (Monday): Last day the Math Department will be flexible on the approval of late withdrawal requests. Beginning Tuesday, February 18, students must have a serious and compelling reason for withdrawing (e.g. medical reason) and must provide supporting documentation for their reason.

April 17 (Friday): Last day to withdraw with a truly serious and compelling reason that is clearly beyond the student's control. Students must **document their reason**. See Math Department for more info.

EMERGENCY PREPAREDNESS

To be able to respond effectively in an emergency, be sure to note (a) fire alarm pull station locations, (b) evacuation map including the class's outside meeting area, (c) emergency procedures for fire, medical emergency, hazardous materials release, earthquake and dangerous situations, and (d) location of nearest emergency phone. Any person with special needs is encouraged to speak with the instructor privately. All campus personnel are required to participate in all campus-wide drills. More emergency preparedness information can be found at the [Classroom Preparedness website](#). The emergency procedures (c above) that you need to follow in our class are detailed in the classroom guide at the end of this syllabus.

If an emergency disrupts normal campus operations or causes the University to close for a prolonged period of time (more than three days), students are expected to complete the course assignments listed on the syllabus as soon as it is reasonably possible to do so.

MY TEACHING (AND LEARNING) PHILOSOPHY

Students should finish this course with relevant and/or prerequisite knowledge, and enhanced analytical thinking skills. Students and the instructor share responsibilities to accomplish this.

As your instructor, I will provide structure and maintain a respectful classroom. I will use a variety of teaching methods to accommodate learning styles of as many students as possible, which may include lecture, class discussion, and student presentations. Certain styles may work better for you than others, but keep in mind that a balanced learning style is necessary for a more complete understanding of math. I will help you learn the material, but part of my responsibility is also to wean you away from dependence on an instructor for learning, to help you become a lifelong learner. I will maintain a schedule necessary to get through the course content, and will not be able to slow down the pace of the course, though I will be available to answer questions during office hours. I will provide guidance by assigning reading and problem sets, however my role is *not* to make learning as easy as possible. Release yourself from dependence on others for your knowledge.

Student and instructor responsibilities should complement each other in order for the most learning to occur. As the student, you need to know the syllabus and be respectful in class. You need to have the prerequisite; mathematics is not a subject where you can jump in the middle, and your instructor does not have enough time to re-teach material from a prerequisite class. You must dedicate time outside of class to studying and working problems. Discipline yourself to do the homework as it is assigned. Once you get behind, the material given in class will be like listening to a foreign language. Ask questions during office hours. Obtaining help from your instructor is a sign of strength and instructors admire students who show that they want to learn. However, if you miss class, you should not expect your instructor to deliver a one-on-one lesson. Make sure you have a phone number of someone in class who will take notes for you and tell you what homework was assigned or what announcements you missed. Remember, the student is responsible for all information given out during class time. You are an adult and should expect to be treated as one.

Keep in mind the following: learning cannot take place without some degree of anxiety, although too much anxiety can inhibit learning. Confusion is part of learning something difficult. Learning the structure of mathematics makes the course more difficult. You are working at a higher cognitive level and must develop perseverance. Your natural aptitude in math is less important than your motivation to succeed, methods of studying, belief that it is worth studying, and work ethic. If you think you can or you think you can't, you're right.

Recommended reading: *How to Succeed in College Mathematics* by Richard M. Dahlke, Ph.D

TENTATIVE SCHEDULE (NEXT PAGE)

As you can see, we have a lot of material to cover this semester. Please be prepared to participate fully in all assigned class activities and to spend time additional time reading the textbook, studying, and doing assignments. Remember, for every hour you spend in a STEM class, you should plan on spending 2-3 hours outside of class each week working to fully understand the content. *This schedule is subject to change. Any changes will be announced on TITANium. Students are responsible for keeping up with any updates.*

Week	Dates	Sections Covered	Content	Notes
1	1/20 – 1/24	Intro, 1.1	<ul style="list-style-type: none"> Solutions and Elementary Operations 	1/20: MLK Day (no classes)
2	1/27 – 1/31	1.1 – 1.3	<ul style="list-style-type: none"> Gaussian Elimination Homogeneous Equations 	
3	2/3 – 2/7	2.1 – 2.3	<ul style="list-style-type: none"> Matrix Addition, Scalar Multiplication, and Transposition Equations, Matrices, and Transformations 	2/4: Last day to add with permit; Last day to drop without W
4	2/10 – 2/14	2.3 – 2.4	<ul style="list-style-type: none"> Matrix Multiplication Matrix Inverses 	
5	2/17 – 2/21	2.5, Exam 1	<ul style="list-style-type: none"> Elementary Matrices 	2/17: Last day the Math Dept will be flexible on the approval of late withdrawal requests. Exam 1: Feb 19
6	2/24 – 2/28	2.6, 3.1	<ul style="list-style-type: none"> Linear Transformations The Cofactor Expansion 	
7	3/2 – 3/6	3.2, 2.9	<ul style="list-style-type: none"> Determinants and Matrix Inverses Markov Chains 	
8	3.9 – 3/13	2.9, 3.3	<ul style="list-style-type: none"> Diagonalization and Eigenvalues 	
9	3/16 – 3/20	3.3, 3.4	<ul style="list-style-type: none"> Linear Recurrences 	
10	3/23 – 3/27	3.4, Exam 2		Exam 2: March 25
SP	3/30 – 4/3	SPRING BREAK		
11	4/6 – 4/10	4.1, 4.2	<ul style="list-style-type: none"> Vectors and Lines Projections and Planes 	
12	4/13 – 4/17	4.2, 4.3	<ul style="list-style-type: none"> Cross Product 	4/17: Last day to withdraw with a truly serious and compelling reason that is clearly beyond the student's control.
	4/20 – 4/24	5.1	<ul style="list-style-type: none"> Subspaces and Spanning 	
14	4/27 – 5/1	5.2, 5.3	<ul style="list-style-type: none"> Independence and Dimension Orthogonality 	
15	5/4 – 5/8	Applications	<ul style="list-style-type: none"> Applications of Linear Algebra to Graph Theory 	
FINALS	5/11 – 5/15	Wednesday, May 13 11:00am – 12:50pm		

