

Instructor: PROF. JEN-MEI CHANG

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Course url: http://www.csulb.edu/~jchang9/m247_flipped_spring.html

Class Info: Section 01, Code 1871, Mon/Wed 9:30AM - 10:45AM, LA5-243.

OHs: Mon 1:00pm-2:00pm; Tue 11:00am-12:00noon; Wed 8:50am-9:20am and by appointment.

Prereq.: MATH 123.

Text: *Linear Algebra and its Applications*, fourth edition, by David Lay.

Objectives: Matrix algebra, solution of systems of equations, determinants, vector spaces including function spaces, inner product spaces, linear transformations, eigenvalues, eigenvectors, quadratic forms, and applications. Emphasis on computational methods.

SLOs: “*The best way to learn is to do; the worst way to teach is to talk.*” — Paul Halmos.

This class will be run as a **flipped classroom**. This means, you, the student, will be put in the center of the learning where you will preview the course materials before each class meeting, actively engage in the discussions during class, and assess your learning through regular homework assignments and self reflections. I will play the role of the facilitator in this process as you initiate, synthesize, and analyze knowledge. There are two domains of knowledge that I expect you to become fluent with by the end of the course – content knowledge and lifelong skills, specifically shown in Table 1.

HW: You are welcome to keep a homework notebook for the problems assigned in the entire semester. The notebook will be checked for overall completeness and correctness on a randomly selected problem on each exam day for *extra credit* (5 points for each exam check for a total of 20 points that are good towards exam grades).

Quiz: You are responsible for periodic *pre-class individual quizzes* (individually graded) and *in-class group quizzes* (all group members share a single grade) throughout the semester. The purpose of the pre-class quizzes is to ensure you come to class prepared for discussions that help to deepen your understanding of the materials. Each person is responsible for working out their own version of the work with assistance from their peers on group quizzes. Through this exercise, you will learn to communicate the mathematics with your peers and be exposed to alternative ways of problem-solving. In-class and pre-class quizzes are each worth 15% of your overall grade. Group quizzes are generally due in the beginning of the next class meeting from the time they are first given. I purposely delay the due day for these quizzes because I want to devote the class time as “help session.” You are welcome to work on the quizzes on your own before coming to class to prepare yourselves for questions, use the class time to resolve your questions, and finish them after class.

Project: You and your group partner(s) are required to pick an applied linear algebra topic to present via a poster presentation. The presentation will be peer-reviewed by your fellow students using a set of rubrics found here: <http://www.csulb.edu/~jchang9/files/posterRubrics.pdf>. Instructions on how to make a poster using PowerPoint is given via <http://www.csulb.edu/~jchang9/files/howToPoster.pdf>. You may draw inspirations from others’ work in the past:

| Content Knowledge |
|--|
| <ul style="list-style-type: none"> You will master the first three levels of Bloom's taxonomy – be able to recall basic facts (through pre-class quizzes), explain key concepts in your own words (through in-class quizzes), and apply learnt techniques in novel settings, particularly in problems that are pertinent to one's field of study (through poster presentation and exams). You should be able to do so even after 6 months from the time you finish this class. |
| Lifelong Skills |
| <ul style="list-style-type: none"> You will become an independent learner who can initiate the learning process, stay on top of the course materials, evaluate your studying habits, develop abilities to detect faults in your learning strategies, and make adjustments when needed. You will become a proficient problem solver, i.e., be able to break down problems into pieces and tackle each piece with appropriate strategies. you will learn to do this by making mistakes. You will become comfortable sharing your ideas to others. In many situations, problems can be solved via many approaches. No idea is ever a wrong idea; there, however, can be better ideas though. You will become an efficient learner by being organized. Being able to stay with the course structure might be a challenge for you if you are not used to learning this way. You will acquire the ability to communicate your ideas clearly through mathematically sound writing and through critiques you receive from writing in public and on quizzes. |

Table 1: Expected student learning outcomes. I set high expectations for my students and I believe you can all achieve them.

<http://www.csulb.edu/~jchang9/m247.html>; however, you are **required** to discuss your topic with me in order to keep the work load reasonable and to prevent multiple groups presenting the same topic. The group poster project presentation is worth 5% of your overall grade; however, if you do not contribute to this project, it will result in an automatic fail of the course.

Exams: You will have three in-class midterm exams that is each worth 15% of your grade and a comprehensive final exam that is worth 20%. Tentative dates for the exams and presentation are given in Table 2. Please make a note of these dates immediately.

| | |
|--------------------|--|
| Exam 1 | Wednesday, February 18, 2015 |
| Exam 2 | Wednesday, March 11, 2015 |
| Exam 3 | Monday, April 13, 2015 |
| Presentation Day 1 | Monday, May 4, 2015 |
| Presentation Day 2 | Wednesday, May 6, 2015 |
| Final | Friday, May 15, 2015; 8:00am - 10:00am |

Table 2: Tentative dates for exams and poster presentations.

Grading: Conventional without curves. I reserve the right to alter your final grade within a reasonable deviation when your **class attendance** and **participation** are considered. The distribution of each category for which your performance will be graded is given in Table 3.

| Category | Percentage |
|-----------------------------|------------|
| Homework Notebook | EC |
| Pre-Class Quiz (Individual) | 15% |
| In-Class Quiz (Group) | 15% |
| Midterm Exams | 45% |
| Project Presentation | 5% |
| Final Exam | 20% |

Table 3: Grade distribution of the required categories.

- Remarks:**
- A detailed schedule of the class with specific learning objectives and learning materials is posted on the class website: http://www.csulb.edu/~jchang9/m247_flipped_spring.html.
 - *No make-up exams will be given.* However, for verified emergencies, arrangements can be made ahead of the scheduled exam time. On the other hand, no make-up quizzes will be given. Pre-class quizzes serve as a gatekeeper for your in-class performance while in-class quizzes are always in groups. Both of these are time sensitive, hence it makes little sense to allow for make-ups.
 - Since a lot of what we do in the class is in a group setting, your attendance is absolutely essential. Your group members need you! If you miss more than 3 times in the entire semester you will receive a F automatically. Two tardiness counts as one absence.
 - Any office hour may be canceled due to illness or necessary appointments, and students should not therefore depend on the faculty being in his or her office for a particular office hour. Students thus should secure any necessary signatures or other requirement well in advance of any deadline.
 - The conditions under which students may withdraw and the documents which must be submitted are detailed in University Policy Statement 09-07, and described in the CSULB Catalog. The most current information on CSULB withdrawals is posted at: <http://www.csulb.edu/depts/enrollment/registration/details.html#anchor1>. It is the student's responsibility to withdraw from classes. Instructors have no obligation to withdraw students who do not attend courses, and may choose not to do so. Each student is responsible to check their MyCSULB account weekly to be certain that the Class Schedule listed accurately reflects the courses s/he is enrolled in for the current semester. Students should also check for any notices the University has sent to them. That said, I would recommend that you do not drop this class since your group members need you!
 - No instructor or office staff can add or change a class for you. Only YOU, THE STUDENT, can add or change classes in YOUR schedule. You may either add classes on-line through your MyCSULB account or in person at Enrollment Services during the registration period.
 - Request for special need for accommodation of a University verified disability should be submitted within the first two weeks with all necessary documentation.
 - The instructor reserves the right to alter anything on this syllabus at any time.
 - Respect your classmates and yourselves. I am committed to your success and willing to do anything to ensure that happens. But you will have to work with me on that. Suggestions

and comments are always welcome and strongly encouraged. Be an active learner! Ask lots of questions and answer lots of questions in class. The best way to learn math is by doing it and explaining to others.