

Fu Jen Catholic University

MATH 340 Linear Algebra & Differential Equations

Summer 2019

Class hours: Monday through Thursday, 2 hours each day

Review and Discussion: Friday, 2 hours

Office hours: Thursday/Friday, 1 hour or by appointment

Field trip: According to Professors' teaching plan

Credit: 3

Total contact hours: 54 hours

Instructor: TBA

Course Description: Introduction to linear algebra including vector spaces, systems of linear equations, bases, linear independence, matrices, determinants, eigenvalues, orthogonality, inner products, and applications of these concepts to solving linear differential equations.

Textbook: Introduction to Linear Analysis lecture notes by N. J. Rose

Prerequisites: Calculus I and II: You should have already completed two semesters of single variable calculus that covers limits derivatives and integrals.

Grading: The grades will be based on the following categories: homework/quizzes/worksheets (35%), one midterm exam (30%) and a final exam (35%).

Homework. Homework will be assigned on a regular basis, some of the problems will be collected and some of those will be graded. No late homework is accepted except when agreed to by instructor prior to the due date. Under no circumstances can late homework be accepted once the set has been graded and returned. Course Teaching Assistant (TA) will run a weekly problem session/discussion on the relevant material on Fridays.

Midterm Exam is tentatively scheduled for Wednesday, July 24. It will be an in class, closed notes, closed books exam. No electronic devices of any type are allowed.

Final Exam will be a comprehensive two hour exam at the end of the term on Friday, August 9. There will be no make-up exam except for REAL emergencies. A proper documentation will be required. If a student must miss a midterm exam because of a University-approved conflict, please contact the instructor as soon as possible. The



midterm and final exams will have duration of 120 minutes and they will take place during the regular class period and in the regular classroom. Apart from circumstances described above, missing an exam will result in the score zero on the exam. For a solution to a problem on a test or homework assignment to be considered complete it is not only required the answer to be correct, but also that a correct outline of the reasoning or a correct calculation leading to it be given as well.

Score to Grade Conversion:

Grade	Percent	GPA
A	90-100	4.0
B	80-89	3.3
C	70-79	2.8
D	60-69	2.4
F	<60	0

Academic Dishonesty: Academic misconduct, including cheating, copying, or unauthorized communication on the test or plagiarism on any written assignment is a serious offense. Engaging in any type of such activities (either as a receiver or provider) will result in a score zero on work in question and possibly in severe consequences, like failing grade for the course and reporting to student's home institution.

Course Outline: The following is a tentative schedule (subject to change, which would be announced in class).

Week 1: Sequences and difference equations, first and second order linear difference equations, the method of undetermined coefficients.

Week 2: Differential equations, separation of variables, linear differential equations, systems of linear equations, matrix notation, elementary row operations, row echelon form and reduced row echelon form.

Week 3: Matrix algebra, inverse of a square matrix, transposes, symmetric matrices, powers of matrices, linear independence. Midterm Exam.

Week 4: Determinants, eigenvalues and eigenvectors, solutions of systems of linear differential and difference equations.

Week 5: Homogeneous and non-homogeneous linear differential equations, Laplace transform and its applications to solutions of differential equations. Final review. Final Exam.