

MATH 245: Elementary Differential Equations & Linear Algebra

Course Syllabus - Fall 2009

Lectures: Every **TuTh 12:35-1:50pm** in TH 335

Instructor: Yitwah Cheung
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Office Hours: Tu 11:30-12:30pm, Th 2-3pm, and by appt.
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Prerequisites: MATH 228 with a grade of C or better (may be taken concurrently).

Bulletin Description: First and second order differential equations; Laplace transforms; matrix algebra.

Course Objectives: The principal aim of *Elementary Differential Equations & Linear Algebra* is for students to learn the elements of first order differential equations, second order linear differential equations; and systems of linear first order differential equations. Students also learn how to solve linear 2nd order initial value problems. Students will also learn the elements of matrix algebra including solving systems of linear algebraic equations and the use of eigenvalues and eigenvectors. Students who successfully complete *Elementary Differential Equations & Linear Algebra* will be capable of:

- Solving or approximating the solutions of first order linear and non-linear equations.
- Solving 2nd order linear differential equations and initial value problems.
- Solving non-homogeneous 2nd order linear differential equations by means of the Laplace transform.
- Using Gaussian elimination to solve systems of linear algebraic equations.
- Determining the transpose, inverse and determinants of matrices.
- Transforming a higher order linear differential equation into a system of first order equations. Use the resulting eigenvalues and eigenvectors of the system to determine solutions of the higher order equation.

Textbook: *Differential Equations & Linear Algebra, 3rd ed.* by Edwards & Penney.

Homework and Reading Assignments: Students should check the course webpage at

<http://online.sfsu.edu/~ycheung/245/>

for daily homework and reading assignments. Handouts and other useful information such as homework due dates can also be found there. Students are expected to complete all homework and reading assignments in a timely fashion. LATE HOMEWORK WILL NOT BE ACCEPTED.

Exams: There are 2 hour-long midterms and a two-hour final exam that will take place at the times given below.

Midterm 1: Thursday, October 15 from 1-2pm in TH 335.

Midterm 2: Thursday, November 19 from 1-2pm in TH 335.

Final: In TH 335 from 10:45am-1:15pm on

Tuesday, December 15.

Absences: A student is considered absent if he/she is not present at the time when attendance is taken. Each student will be allowed two unexcused absences. After that, 3 points will be deducted from the student's raw score (see next item) for each unexcused absence.

Your Grade: There will be at least 10 Homework Sets, each worth 10 points. In addition, there are 2 midterms, each worth 100 points, and a final exam, worth 200 points. Your *raw score* out of 600 is the sum of the combined scores on your Homework Sets (200 points) plus the sum of your midterm scores (200 points) and your score on the final (200 points) minus points deducted for unexcused absences. Your grade for the course will be based on your *normalised* score, which is your raw score divided by 6, following the scale below. A curve, if used, will only be to your advantage.

Total score	0-59	60-62	63-66	67-69	70-72	73-76
Grade	F	D-	D	D+	C-	C
Total score	77-79	80-82	83-86	87-89	90-92	93-100
Grade	C+	B-	B	B+	A-	A

Academic Integrity: All students are expected to adhere to the SFSU honor code. Any student caught cheating on an examination will automatically fail the course and face expulsion from the University. Each Problem Set is to be written up individually. However, students may and are in fact encouraged to discuss the homework problems with each other.

Enrollment Status: You are solely responsible for maintaining your own enrollment status. Check the “Withdrawl Policy” on the course webpage for the proper procedures for maintaining your enrollment status.

DPRC: Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472) or by email (dprc@sfsu.edu).

Religious Holidays: Reasonable accomodations will be made for you to observe religious holidays when such observances require you to be absent from class activities. It is your responsibility to inform the instructor during the first two weeks of class, in writing, about such holidays.

MATH 245: Course Schedule

Fall 2009

Text: *Differential Equations & Linear Algebra* by Edwards & Penny, 3rd ed.

In the table below, A.B refers to Section B of Chapter A.

8/25	Tu	1.1, 1.2	10/20	Tu	3.1, 3.2
8/27	Th	1.3, 1.4	10/22	Th	3.4, 3.5, 3.6
9/1	Tu	1.5	10/27	Tu	6.1
9/3	Th	1.6	10/29	Th	6.2, 6.3
9/8	Tu	Furlough	11/3	Tu	Furlough
9/10	Th	2.1, 2.2	11/5	Th	7.1
9/15	Tu	2.3	11/10	Tu	7.2
9/17	Th	2.4	11/12	Th	7.3
9/22	Tu	5.1	11/17	Tu	7.5
9/24	Th	5.2	11/19	Th	Midterm #2
9/29	Tu	5.3	11/24	Tu	no class
10/1	Th	5.4	11/26	Th	no class
10/6	Tu	5.5	12/1	Tu	10.1
10/8	Th	5.6	12/3	Th	10.2
10/13	Tu	Furlough	12/8	Tu	10.3
10/15	Th	Midterm #1	12/10	Th	Review