

Math 2A-61, Spring 2019 (46293)

Richard Hansen

Differential Equations; TTh 6:30-8:45 pm; E-32

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Text: Zill, A First Course in Differential Equations with Modeling Applications; 11th edition

Website: deanza.edu/faculty/hansen Office Hours: Before class -- MTWTh 5:30 - 6:20 pm (location TBD)

Syllabus: Ordinary differential equations and selected applications. Prerequisite: MATH 1D (grade C or better).

Equipment: Graphing calculator, numerical only -- no algebraic calculators -- see more info on the website.

Week(Tuesday) Topics (with reference to chapters and sections in Zill)

- 1 (4/9) Introduction; 1: 1-3 (definitions, initial value problems, modeling)
- 2 (4/16) 2: 1,6 (first order equations: solution curves, Euler's Method); Quiz #1
- 3 (4/23) 2: 2-5 (first order equations: separable, linear, exact, substitutions); Quiz #2
- 4 (4/30) 3: 1-3 (first order equation modeling: linear, nonlinear, systems); *Test #1 (May 2)*
- 5 (5/7) 4: 1-3 (higher order equations: linear, reduction of order, homogeneous with constant coefficients)
- 6 (5/14) 4: 4-6 (higher order equations: undetermined coefficients, variation of parameters); Quiz #3
- 7 (5/21) 4: 7,9-10 (higher order: Cauchy-Euler, systems, nonlinear); Quiz #4
- 8 (5/28) 5: 1-3 (higher order modeling: linear, nonlinear); *Test #2 (30 May)*
- 9 (6/4) 6: 1-4 (power series solutions: ordinary points, singular points, special functions)
- 10 (6/11) 7: 1-6 (Laplace Transform, inverse transforms, Dirac Delta, systems); Quiz #5
- 11 (6/18) *Test #3 (18 June);* catch up and review
- 12 (6/25) **Final Examination, Thursday, 27 June, 6:15 - 8:15 pm**

Course Requirements: The course will consist of a combination of teacher demonstrations with student participation in discussions, individual, and group work.

1. There will be five Homework **Quizzes** during the quarter based upon the suggested problems. No make-ups will be given, unless arranged in advance. The lowest quiz score will be replaced by the average of the four best scores to compute the course grade. Success in the course requires practice: at a minimum, students should work the problems that are suggested.

2. There will be three in-class **Tests**. Note the dates; no make-ups will be given, unless arranged in advance. If higher, one-half of the score on the final exam will replace the lowest test score to compute the course grade.

3. There will be a comprehensive two-hour **Final Examination**, Thursday, June 27, from 6:15 to 8:15 pm. Any student missing the final exam will fail the course; no excuses are acceptable.

Grading:	Quizzes	(5 X possible 30 points each)	150
	Tests	(3 X possible 50 points each)	150
	Final Exam	(1 X possible 100 points)	<u>100</u>
			400 points

Course grades will reflect the following percentage range of total scores:

A = $90 \leq \% \leq 100$ [360, 400+]	C = $60 \leq \% < 75$ [240, 300)	F = below 50% (below 200)
B = $75 \leq \% < 90$ [300, 360)	D = $50 \leq \% < 60$ [200, 240)	

Grades of B+, B-, and C+ will be used as the final distribution of grades warrants; A- will not be used.

Attendance: Regular attendance is expected. A student who misses any class during the first two weeks of the quarter may be dropped from the course. Inform the instructor, in advance, of any necessary absences; email the instructor if an emergency arises. Note, however, that it is the student's responsibility to formally "drop" the course. Protect your academic record by observing these deadlines:

21 April to drop with no record	3 May for P/NP option	31 May to drop with a "W"
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Suggested Problems

Be sure to check the class website, <http://www.deanza.edu/faculty/hansen>, and its "Notes to Students" page for updates on our progress through the course material.

The key to success in any mathematics course is doing homework, and the website has a "Suggested Homework Problems" page. Use these problems for practice. They will NOT be collected but will be the basis for the course Quizzes. The problems are not meant to be comprehensive; you should work additional problems. It is a big help to work on these problems in collaboration with other students in course.

The text contains answers for selected odd-numbered problems. In addition, the Student Resource and Solutions Manual, containing worked solutions to every third odd problem, may be purchased in the Bookstore.

Please utilize the Tutorial Center (MSTRC), S-43, for assistance and group work.

Suggested Homework Problems:

These will be provided as the course develops. See the "Suggested Homework Problems" webpage.

Student Learning Outcome(s):

*Construct and evaluate differential equation models to solve application problems.

*Classify, solve and analyze differential equation problems by applying appropriate techniques and theory.