San José State University
College of Science, Department of Mathematics & Statistics
MATH 33LA: Ordinary Differential Equations and Linear Algebra

Fall 2020

Course and Contact Information

Instructor:	Prof. Liam Stanton
Email:	liam.stanton@sjsu.edu
Office Hours:	Monday 4:30-5:30 pm, Tuesdays 11:00 am-12:00 pm (Zoom)
Class Days/Times:	Mondays and Wednesdays, 12:00-1:15 pm
Prerequisites:	Math 31 (with a grade of "C-" or better) or by instructor consent.

Online Resources (Slack)

Slack will be the preferred venue for course content related questions, where the TA (Alana Bailey) will be able to address any questions in an open forum.

Catalog Description

Matrices, determinants, systems of linear equations, vector geometry, linear transformations, eigenvalues and eigenvectors, diagonalization, first order differential equations, linear systems of differential equations, higher order differential equations, Laplace transforms. (3 Units)

Topics Covered

Systems of linear equations, Matrix algebra and determinants, Eigenvectors and eigenvalues, Diagonalization of matrices, First order differential equations, Basic theory of first and second order differential equations, Laplace Transform, Systems of differential equations.

Course Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Solve differential equations with a variety of methods, such as Laplace transforms.
2. Understand matrices and determinants and their importance in solving systems of linear equations.
3. Use matrices and determinants in solving systems of linear differential equations.

Textbook (available as eBook through MyLab enrollment)

Fundamentals of Differential Equations,
by Nagle, Saff and Snider, Pearson, 9th edition.

Online Assignments (MyLab)

Homework will be given out weekly using MyLab and will constitute 20% of your final grade, where the two lowest homework grades will be dropped. Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying. All exams will be administered through MyLab as well. Course materials will be posted to Canvas, and assignments can be accessed under the "MyLab and Mastering" tab on the left-hand side. To register, simply click "Open MyLab & Mastering", accept the terms and conditions, and create an account with Pearson.

Final Examination

A final exam will be administered at the end of the semester through MyLab on Dec 9th from 9:45am-12:00pm and will constitute 35% of your grade.

Grading Information
- Anticipated grade conversion: A = above 80%, B = 70 − 79%, C = 60 − 69%, D = 50 − 59% and F = below 49%. The very upper/lower portions of these ranges will be reserved for +/− grades. *A curve will only be applied to improve grades, if necessary.*
- Homework (20%), Exam 1 (20%), Exam 2 (25%), Final Exam (35%)
- Late homework will be penalized by 20% off for each day late.

Classroom Protocol

While attendance is not mandatory, it is highly recommended. Please arrive to class promptly. There is a zero-tolerance policy on cheating, and faculty are required to report all infractions to the Office of Student Conduct and Ethical Development. Furthermore, students caught cheating on exams will be given an automatic zero. The policy on academic integrity can be found at http://www.sjsu.edu/studentconduct/Policies/. **Zoom-bombing or other forms of classroom hijacking will be reported to the police as well as the relevant federal authorities.**

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/

Course Schedule

Week	Date	Topics
1	08/19	Introduction
2	08/24	Direction fields and separable ODEs (1.1-1.3, 2.1)
3	08/31	Integrating factors and applications of 1st-order ODEs (2.1-2.3)
4	**09/07**	**Labor Day (holiday)**
4	09/09	Numerical methods (1.4, 3.6)
5	09/14	More numerical methods and 2nd-order ODEs (3.7, 4.1-4.3)
6	09/21	Exam 1 review
6	**09/23**	**Exam 1**
7	09/28	Nonhomogeneous equations: method of undetermined coefficients (4.4, 4.5)
8	10/05	Laplace transforms of initial value problems (7.2-7.5)
9	10/12	Laplace transforms of discontinuous functions (7.6, 7.8)
10	10/19	Systems of differential equations and applications (5.1-5.5)
11	10/26	Introduction to vectors and matrices (9.1-9.3)
12	11/02	Exam 2 review
12	**11/04**	**Exam 2**
13	11/09	Matrix determinants and inverses (9.3)
13	**11/11**	**Veterans Day (holiday)**
14	11/16	Eigenvalues and eigenvectors (9.4-9.5)
15	11/23	Nonhomogeneous systems (9.7)
16	11/30	Matrix exponentials (9.8)
17	12/07	Final exam review
Final Exam	**12/09**	9:45am-12:00pm

Sections from the Nagle, Saff & Snider textbook (found under the suggested reading) have been listed next to the weekly topics above.

Note: This schedule is subject to change with fair notice, and any updates to the syllabus will be redistributed on Canvas. There will be no make-up exams except in the case of extraordinary circumstances.