

Los Angeles City College, Summer C 2024
 Math 275 *Ordinary Differential Equations*
 Sec 11126 3 Units
 MTWTh 9:00 AM – 11:50 AM, Remote Online

INSTRUCTOR: Roy W. Erickson, CANVAS inbox (1day reply) ericksrw@laccd.edu (1 week reply)

OFFICE HOURS: Saturday at 10:30am.

PRE-REQUISITES: Mathematics 262 Calculus II (or Equivalent)

SUBJECT MATTER (SLO): Provides the student with a basic understanding of the theory and content of ordinary differential equations. Various methods of solving these equations, especially first and second order, are emphasized as are solutions to physical applications problems. Other topics covered include existence and uniqueness theorems, systems of linear differential equations, numerical and graphical methods using computers, and the Laplace transform.

WEIGHTING: Comprehensive Final Exam 25%, 3 Highest Tests 45%, Homework 15%, Projects 15%

Note: 4 tests are given, but the lowest 1 are dropped. Thus, NO make-up tests are given so plan accordingly.

GRADING: A: 100 – 90.0, B: 89.9 – 80.0, C: 79.9 – 70.0, D: 69.9 – 60.0, F: 59.9 – 0

TENTATIVE SCHEDULE: Summer 2024

Week	Date	Monday	Tuesday	Wednesday	Thursday
1	15 Jul	Syllabus – Inverted Pendulum 1.1 Terminology 1.3 Mathematical Models	2.1 Direction Fields, Eqb Solns 2.2 Separable Equations I	2.2 Separable Equations II 2.3 Lin Eqns Integrating Factors I	2.3 Lin Eqns Integr Factors II 2.4 Exact Equations
2	22 Jul	TEST 1 Project 6 Num due 1.2 IVP & Existence	4.3a 2 nd Order: Real Roots 4.3c Complex Roots (4.3)	4.2 Reduction of Order 4.3b Real Roots, Double Roots 4.4 Undetermined Coefficients I	4.4 Undetermined Coefficients II
3	29 Jul	TEST 2 4.6 2 nd Order Variation of Params	3.3 Systems of Linear ODEs B.2 Elimination I	B.2 Elimination II B.1 Matrices	Add-on: Eigen probs
4	05 Aug	TEST 3 Project 3 Diag is due 8.1 Systems of Linear ODEs 8.2pt1 Systems w/ Real and Repeated Eigenvalues	8.2pt2 Systems w/ Complex Eigenvalues 8.2pt3 Real repeated Eigenvalues	8.3 Non-Homogeneous Systems 7.1 Laplace Transforms	7.2 Inverse LT 7.x Solving IVP with LT
5	12 Aug	TEST 4 Project 4 Φ is due 6.2 Series Solution – Regular Pt	6.3 Types of Singular Point	9.2 Numerical: Runga-Kutta Method Project 5 C-E is due, Review	Comprehensive Final Exam 02 Feb 9:00am-11:00am

Last Day to: Drop w/ a Refund: 17 JUL, Enroll & Drop w/o 'W': 20 JUL, Census 29 JUL, Drop w/ "W": 10 AUG v.1

WORKLOAD: This class will require a major time and effort commitment. **5 week sessions are 3x the regular workload!!!** Plan on spending at least an hour or two (x3) each night studying, doing problems, and/or writing up lab reports. This class is a 3 unit math class, which means you should be spending a lot more time on it than the typical 3 unit class. **DO NOT FALL BEHIND!** It is very difficult to catch up in this class as each chapter builds on the previous chapters, so stay on top of things. Ask for help if you are confused about anything. **DO NOT ASSUME YOU WILL FIGURE IT OUT LATER AND CATCH UP!**

HOMEWORK: After the lecture of each section consider the HW to be assigned, even if it was not formally announced (ask if in doubt). Work the problems listed in the HW Syllabus. E-mail *a fellow student* should you miss class as I do not always recall the details from class to class (I teach other classes and I work a part-time day

job :) **Assigned HW is due at the start of Monday's class!** Late HW is NOT accepted under any circumstances! Each problem will be given a grade of 0 or 1 based primarily on completeness. Classwork and short quizzes may be given at random based on homework problems and carry a heavier weight.

HOMEWORK GUIDLINES: In order to receive full credit for homework, tests and projects your work must follow a specific set of style rules summarized in the handout "Homework Guidelines." These are like the rules in English classes: (([See my homework examples](#)))

- + HW must be properly labeled and scanned into a single PDF file by the section to be accepted.
- + Every HW assignment (section) **starts** on a new page and needs class, title and name along the top.
- + *Please DO NOT scan multiple sections into one file.*
- + All work is to be done on 8.5" x 11.0" **white paper** with *no lines* on paper (b/c of scanning issues)
- + Readable: Neatly written and organized layout of your work

My grader, and I, are *not* obligated to grade any type of work, including exam work, failing to follow these guidelines. Messy work reflects on your self-respect as well as your respect towards those who must read it.

EDICTS: The following edicts will be strictly adhered to – no credit will be granted otherwise:

- + Notation used on all submitted work must match that used in class or in the textbook
- + Work must be legible and narrated (explaining what you are doing in a word or three)
- + Work must be done in one column or other wise directed via arrows.
- + All scans will record the last modification date and time within the electronic file itself
- + Lined paper is forbidden

TESTING PROCEDURES: Hourly tests are broken into two 30 minute tests with scan time at the end each part.

- a) Log into CANVAS and start your zoom session through CANVAS. **Every minute of class zoom time gets recorded during the tests.** So PLEASE assure your environment is conducive to being viewed by me (and at times your classmates). Restroom breaks are *not* normally allowed.
- b) Point your zoom camera (computer/laptop/tablet camera) at your face, *You must remain connected to zoom the entire time of the test. Your face must be clearly seen in your zoom camera the entire time during the test.* During the test you might be approached by me, via private chat on zoom, to turn up the room lights, or to reposition your zoom camera onto yourself.
- c) Download the test from CANVAS when the Start Time allows it.
- d) Open your test on your device, or, if you wish, print it out. *Chat with me when leaving to get your printout.*
- e) Begin to answer your questions on your own white paper (printer or photocopy paper). Use the zoom Private Chat to ask me any questions regarding the readability, or the interpretation of test questions.
- f) Please note the test's Due Date and End Time on CANVAS!!!!
- g) At the Due Date time – stop writing and start scanning. Upload your test to CANVAS by clicking on the [Submit Assignment](#) button. Ignore the "Late" warning that CANVAS posts between the Due Date and the End Time, there is no penalty in between these times.
- h) CANVAS will *not* allow you to upload your test after the End Time
 - at that point you will need to email it to roy.erickson@canyons.edu *but ...*
 - you will receive a penalty on your test score of 4%, per every minute late after that.

(Your scanner, email protocols, and zoom time on the recordings mark the time of creation and last modified, sent time, received time in email, and, the file system marks the placement time into the files. So we know when your files are late.)

DISABILITIES AND GRIEVANCES: Students with a verified disability who may need reasonable accommodations for this class are encouraged to notify the instructor and contact the Office for Special Services (SSV 100, 323-953-4000 x 2270) as soon as possible. *All information will remain confidential.* I will do my

best to accommodate any disability that any student may have. If you have any complaints or grievances about the class or your treatment in it, talk to me first, so that we can work out any issues.

CHEATING results in a zero on the element being tested on. If seating allows for it we sit every other seat during the examination period. I reserve the right to rearrange people during the tests. *No restroom breaks!* Three Strikes: 1- “Eyes on your own paper,” 2- I tap your desk, 3- I take your exam and put a Zero on it. Further cheating warrants a visit to the Dean, the results of which could be expulsion from CoC!

DISTRACTIONS: Late students create an unnecessary distraction, so it is your responsibility to your classmates to arrive on time. *Once in class* - stow all devices. You may be asked to leave class if you are texting or using your device in class. *At home* - place your device in the freezer while studying, visiting it 10 minutes at the end of each hour. Turn off your TV, youtube, GF or BF. Turn on aggressive classical music - it wires the brain for math. Some people study best in the mornings – know your learning style. Avoid heavy foods before class and study. Drink plenty of water and eat almonds, raisins, yogurt, veggies to combat tiredness. You are what you eat! Go for a walk before class.

INCOMPLETES: Incompletes (I) are given only for serious and verifiable reasons. You must also have a current grade of C or greater when requesting one.

TUTORING: Group study outside of class is highly encouraged. Tutors are available at the STEM lab FH304.

DROPPING THE CLASS: I will drop you if you miss four lectures without notifying me. Dropping after the posted drop date will result in a “W” on your transcript. **Effective July 1, 2012** students have only 3 attempts to pass a class. A grade of "D", "F", "I", or "NP" in a class, or a "W", will count as an attempt.

TEXT: *A First Course in Differential Equations with Modeling Applications, 11th Ed*, Dennis G. Zill (c) 2018, Cengage
ISBN: 978-1-305-96572-0

REQUIRED HARDWARE: A computer, or laptop or larger sized-tablets (8” diagonals or more) are required to participate in this class. LACC offers laptops for students that need them. Smartphones and small tablets are not allowed – their screens are too small to have the necessary resolution to view exams and lectures.

REQUIRED APP: A scanning app for submitting documents: Examples are “[Genius Scan](#)” or “*camscanner*,” or “*Adobe Scan*.” These apps convert color images to **lightweight** black and white PDF files. You must be able to scan HW and Exams 'page-by-page' and submit them to CANVAS, each section's HW or each Exam as a **single** PDF document. Practice ahead of time so that during the short upload period following exams you will meet the upload deadline.

WEBSITES: [Instructor's Website](#)

THE NOTEBOOK: I'm telling you a secret I wish I knew about at the start of my college education – *Take your notes in a composition book!* Other methods have flaws that make them short lived – composition books last. The only notes from my 10 years of college that are still on my shelves are those taken in composition books.

1. Cut out and keep your syllabus taped to the first pages for rapid reference.
2. Keep a HW log of what was assigned and what you have completed (just cut'n paste the HW Syllabus into your notebook).
3. Keep a Table of Contents. Write Sections down and your homemade page numbers you make as you go along.
4. Then you have the Chapter notes: section by section.
5. Cut'n tape 'recipes' in-between your note book pages.

((See [Notebooks examples](#)))

Course: MATH 275

Title: Ordinary Differential Equations



Course Description

Students learn to categorize different types of differential equations. Students learn to use techniques such as separation of variables, exact differentials, homogeneity, and change-of-variable (substitution) to solve first-order equations as well as first-order initial value problems (IVPs). Students apply this knowledge to solve real-world problems such as population growth and mixture problems. Students learn to solve higher-order linear differential equations using constant coefficient technique, the method of undetermined coefficients and variation of parameters. Students apply this knowledge to physics applications such as simple harmonic motion. Students solve equations of higher-order with variable coefficients applying specific techniques based on the type of the given equations. Topics include: Cauchy-Euler equations, power series solutions, Bessel's equations, and Legendre's equation. Students learn the Laplace transform and its properties and apply this knowledge to solving various differential equations as well as IVPs. Students use techniques for solving systems of linear differential equations.

Units/Transferability

3 units transferable to UC/CSU

Prerequisites/Co-requisites/Advisories

Prerequisite(s): MATH 262 or by Appropriate Placement . No Corequisite . No Advisory .

Course Student Learning Outcomes

1 . Solve first-order differential equations. 2 . Solve higher order differential equations.

Grading Scale or Criteria

A - Excellent

B - Good

C - Satisfactory

D - Less than satisfactory

F - Failing

P - Pass; at least equivalent to a "C" grade or better

NP - Not Pass; equal to "D" or "F" grade

Drop and Repeats

Effective July 1, 2012 students are allowed three (3) attempts to pass a single class within the Los Angeles Community College District. If a student gets a "W", "D", "F", or "NP" as a grade in a class, that counts as an attempt. If you think you will not be able to complete this course with a C or better, please drop by the due date.

For all important dates make sure to visit <https://www.lacitycollege.edu/academics/calendars>

Attendance Policy

Students who are registered and miss the first time the class meets may lose their right to a place in the class. Whenever students are absent more than 10% of the total meeting days of the class, the instructor may exclude them from class. If the instructor determines that there are no mitigating circumstances that may justify the absences, the instructor may exclude a student from the class. Students are responsible for officially dropping a class that they stop attending.

Financial Aid

If you need help paying for books and other college expenses, call the Financial Aid Office at (323) 953-4000 ext.2010 or email finaid@lacitycollege.edu.

Accommodations

Students with a verified disability who may need authorized accommodation(s) for this class are encouraged to notify the instructor and the Office of Special Services (323-953-4000, ext.2270 or email oss@lacitycollege.edu). Visit OSS on Cranium Café <https://lacc.craniumcafe.com/> or the OSS website: [https://www.lacitycollege.edu/student services/spr/oss](https://www.lacitycollege.edu/student_services/spr/oss)

Library

Library Digital Materials Accessibility

The LACC Library provides online access to databases, eBooks, full-text articles, streaming videos, research skills workshops, and 24/7 reference chat for research support.

If you cannot fully access the materials on any page on our site or in our databases, please contact the library by email at mlklibrary@lacitycollege.edu, by phone at 323-953-4000 extension 2406, or in-person during library hours. Please include the nature of the accessibility issue (including the name of the database), the location of the material with which you are having difficulty, and your contact information. There may be an alternative accessible format of the information available, an alternative solution identified, or improvements that can be made to make the information accessible.

Additional individualized accommodations may be available through the Office of Special Services (OSS). Students do not need to be signed up with OSS to select alternative assignments that do not use the product with identified accessibility barriers when an alternative solution for a product requires that alternative assignments be made available for all students.

Please see the Equally Effective Alternate Access Plan (EEAAP) guide <https://libguides.wlac.edu/eeap> for specific alternative solutions for each of our electronic library databases.

Check the library webpage (<http://library.lacitycollege.edu>) for hours and updates.

Student Code of Conduct

Violations of academic integrity include, but are not limited to, the following actions: cheating on an exam, plagiarism, working together on an assignment, paper or project when the instructor has specifically stated students should not do so, submitting the same term paper to more than one instructor, or allowing another individual to assume one's identity for the purpose of enhancing one's grade (see LACCD Board Rule 9803.28). Penalties may include a grade of zero or "F" on an exam or paper, or even suspension from the College.

Prohibited Discrimination

The policy of the Los Angeles Community College District is to provide an educational, employment and business environment free from Prohibited Discrimination, as defined by Board Rule 15003. Employees, students, or other persons acting on behalf of the District who engage in Prohibited Discrimination as defined in this policy or by State and Federal law shall be subject to discipline, up to and including discharge, expulsion, or termination of contract. The specific rules and procedures for reporting allegations of Prohibited Discrimination and for pursuing available remedies are included in Administrative Regulation C-14. A copy may be obtained from the Deputy Title IX Coordinator or from the District's Office for Diversity, Equity, and Inclusion.

Any member of the Los Angeles City College community, which includes students, faculty, and staff, who believes, perceives, or actually experiences conduct that may constitute prohibited discrimination, has the right to seek the help of the College. Every employee has the responsibility to report such conduct to the Title IX Coordinator or the District's Office of Diversity, Equity, and Inclusion when it is directed toward students. Potential complainants are advised that administrative and civil law remedies, including but not limited to injunctions, restraining orders or other orders, may be made available. For assistance, contact the Deputy Title IX Coordinator at (213) 891-2315, or SpeakUp@lacitycollege.edu, or Diversity-Programs@email.laccd.edu.