MATH 33B Differential Equations, Spring 2025

LEC 2: MWF 10-10.50am, Bunche Hall 2209A

LEC 3: MWF 3-3.50PM, MS 4000A

Instructor: Katie Marsden, Math. Sciences (MS) 6220, kmarsden@math.ucla.edu. Feel free to call me "Katie" in person and in emails.

Office Hours: Mondays 1-3pm. Location: MS 6118.

Teaching assistants:

Lec 2 Dis 2A/2B: Zach Baugher, zmb@math.ucla.edu, MS 3921. **OH:** Monday 4-5pm and Wednesday 12-1pm.

Lec 2 Dis 2C/2D: Jacob Swenberg, jaswenberg@math.ucla.edu, MS 6603. **OH:** Tuesday 11-12 and Thursday 11-12.

Lec 2 Dis 2E/2F: Annie Lu, alu@math.ucla.edu, MS 3915E. **OH:** Tuesday 11-12.

Lec 3 Dis 3A/3B: Reed Spitzer, spitzer@math.ucla.edu, MS 2905. **OH:** Thursday 4-5pm.

Lec 3 Dis 3C/3D: Ely Jrade, ebjrade@math.ucla.edu, MS 2954. **OH:** Tuesday 1-2pm.

Lec 3 Dis 3E/3F: Jacob Murri, jwmurri@math.ucla.edu, MS 6161. **OH:** Tuesday 4-5pm.

Student Math Center (SMC): *Math TA's hold flexible office hours in MS 3974, 9am-3pm Monday-Thursday starting Monday 7th October. See https://ww3.math.ucla.edu/student-math-center/.*

Grader: LEC 2: Amy Ionescu aionescu2@g.ucla.edu.
LEC 3: Kimberley Vu, kimberlyvu@g.ucla.edu.

Course Schedule: The schedule of lectures (i.e. what we will be studying each day) along with all homework deadlines and important dates can be found here: https://docs.google.com/spreadsheets/d/1g4Ea439cVXJn1H_wW4EqOgDppGCM-vYjFcMAZfJdqRk/edit?usp=sharing. I will update it as necessary throughout the quarter.

Class attendance is not mandatory, you do not need to inform me if you cannot attend a lecture. In this case you should catch up by asking a peer for notes, using the resources uploaded to BruinLearn and looking up the textbook sections indicated in the course schedule above,

Textbook: Differential Equations (2nd Edition), Polking, Boggess and Arnold.

> ***This course is part of the UCLA Store's Bruin Digital program, Bruin One Access. If you do not wish to participate in Bruin One Access or Inclusive Access, you must opt-out by the Friday of 2nd week deadline or you will be billed. Please read the notice at the end of this syllabus for more information.***

Prerequisites: MATH 31B, Integration and Infinite Series.

- Highly recommended: MATH 33A, Linear Algebra and Applications. We will introduce any material we need in the course, but if you want to get ahead familiarity with the following concepts would be helpful: *eigenvalues/eigenvectors and the characteristic polynomial, linear independence and bases*. Knowledge of basic matrix arithmetic (multiplying matrices, taking determinants of and inverting small matrices) will be assumed.
- We will also assume familiarity with complex numbers (in particular Euler's formula $e^{i\theta}=\cos\theta+i*\sin\theta$), and partial derivatives of functions of many variables. You should also be familiar with the hyperbolic trig functions (sinh, cosh, tanh).
- Practice integration in all its forms!

Communication: We will use **Campuswire** as a discussion forum. The link is https://campuswire.com/p/G1B5A2C2Fand the code is 5088.

- Academic questions **must** be posted on the Campuswire forum (not by direct message) or asked in office hours/discussion sessions/directly after lectures. **Emails and direct messages with academic questions will be ignored.***
- Emails and direct messages are of course acceptable if the question is personal or applies only to your particular situation.
- Important course announcements will be posted on BruinLearn.

*For legal reasons, participation in the Campuswire forum is optional. If you choose not to join Campuswire, you may post questions on the BruinLearn discussion forum.

Discussion Sessions:

Dis 2A: Tuesday 10.00am-10.50am Bunche 3157

Dis 2B: Thursday 10.00am-10.50am Bunche 3157

Dis 2C: Tuesday 10.00am-10.50am MS 5117

Dis 2D: Thursday 10.00am-10.50am MS 5117

Dis 2E: Tuesday 10.00am-10.50am Royce 152

Dis 2F: Thursday 10.00am-10.50am Royce 152

Dis 3A: Tuesday 3-3.50pm MS 5118

Dis 3B: Thursday 3-3.50pm MS 5118

Dis 3C: Tuesday 3-3.50pm MS 5137

Dis 3D: Thursday 3-3.50pm MS 5137

Dis 3E: Tuesday 3-3.50pm MS 5127

Dis 3F: Thursday 3-3.50pm MS 5127

Course Assessment*:*

Homework: Homework will *generally* be due on **Tuesdays at 11.59PM on Gradescope**. *Note you do not need a gradescope link, log in through BruinLearn*.

a. It is strongly recommended that you start working on problems the same day they are assigned (or at least before the next lecture). This way you will be well-prepared for the next class.
b. A few problems will be graded in detail and the rest for completeness.
c. You are encouraged to collaborate on homework however you must write up submissions individually and *in your own words*.
d. **5% of the available points will be deducted from homework submitted over 24 hours late. Homework over 3 days late will not be accepted. Your lowest 2 homework scores will be dropped.**

2. **Exams:** There will be two midterms and one final. There will be no make-up midterms, see grading scheme. You must take the final to pass the class, otherwise your grade will be marked as I (incomplete) and you will have the opportunity to take the exam next semester. Exams will be as difficult as the homework.
   Your work must be legible and you must show your working to receive full credit.

Please bring your student ID to every exam. Under no circumstances are phones, tablets, laptops, smart watches or any other such electronic devices allowed within reach during exams.

- **Midterm 1:**
  - When: Wednesday April 23rd, usual class time.
  - Where: TBA
  - Material assessed: Lectures 1-9 (including related homework/discussions).
- **Midterm 2:**
  - When: Wednesday May 21st, usual class time.
  - Where: TBA
  - Material assessed: Lectures 10-21 (including related homework/discussions).
- **Final:**
  - When: **LEC 2:** Tuesday June 10th, 11.30am-2.30pm.
    LEC 3: Friday June 13th, 8am-11am.
  - Where: TBA
  - Material: Cumulative: the exam will cover all the material from lectures and homework. **The final will examine all material (from both midterms and after) with roughly equal weights.**

Grading: Your grade will be determined according to the maximum of the following schemes:

Scheme 1	
Homework	15%
Midterm 1	20%
Midterm 2	20%
Final Exam	45%

Scheme 2	
Homework	15%
Lowest Midterm	0%
Highest Midterm	30%
Final Exam	55%

Students scoring at least 90%, 80%, or 70% overall will be awarded at least an A-, B- or C- respectively. Any decisions on curving will be made after the final exams have been graded. I will not be able to answer questions on this throughout the quarter.

A+'s may be awarded according to a different scheme to the above, and will be awarded very sparingly in accordance with department policy. In particular, the policy of dropping a midterm *may* not apply to the awarding of A+'s.

If this course is a requirement for your major, you must take the course for a letter grade.

Additional resources: Many of the topics we discuss are covered on the excellent website "Paul's Online Math Notes" https://tutorial.math.lamar.edu/Classes/DE/DE.aspx. Further resources and previous lecture notes for the course can be found in the "Additional resources" folder on BruinLearn.

This course is part of the UCLA Store's Bruin Digital programs, Bruin One Access. Your required course materials are being automatically provided to you by the first day of class or upon enrollment. The materials are being provided at a reduced and competitive price. You will receive e-mail from the UCLA Store (UCLA Store <no-reply>@verbasoftware.com) with program details and cost sent directly to your email address on file with the Registrar. It is *your responsibility* to read all communication coming from the bookstore. Check your spam folder if not received.

Everyone enrolled in this course is automatically a participant to start and will have access to the materials through 2nd week of class. **Those remaining in the program after 2nd week will be billed for the materials directly to their BruinBill account and will have continued access to the materials.** ***If you do not wish to participate in Bruin One Access or Inclusive Access, you must opt-out by the Friday of 2nd week deadline or you will be billed.*** Those who opt-out will lose access to the digital materials, will be required to return any print materials provided by the program and will be responsible for obtaining the materials on their own.

Do not pay for your materials through the publisher website unless you are opting out of the Bruin Digital programs. Bruin One Access or Inclusive Access course materials will be billed to your BruinBill account.

Questions regarding the applicable program can be directed to bruinoneaccess@asucla.ucla.edu.

Center for Accessible Education (CAE): Students needing academic accommodations should contact the CAE at (310) 825-1501, Murphy Hall A255. To ensure accommodations, students should contact the CAE by the second week of term. If you need to take exams in the CAE Testing Centre you will need to schedule this yourself at least seven days prior to

the exam (earlier for finals-check with the CAE). See https://cae.ucla.edu/faculty-handbook/testing-accommodations. **Please release your accommodation letters through the CAE platform Clock-work.**

Notice about academic integrity: Students are expected to be aware of the University policy on academic integrity in the UCLA Student Conduct Code: https://www.deanofstudents.ucla.edu/individual-student-code. Please be warned that the instructor and TA are *obliged* to report any suspected academic dishonesty to the Office of Student Conduct.

Basic Needs Support: All students deserve to have their basic needs met, including reliable access to nutritious food, safe housing, hygiene products, transportation, and more. If you are experiencing challenges accessing any of these, you are not alone, and there are resources on campus to support you. In the "Files" section of the course BruinLearn page, you will find the document entitled "Basic Needs Support" containing further information about the resources available to you if you find yourself in need.