1. About the Course

(a) The catalog description of the course is the following: **266A. Applied Ordinary Differential Equations. Lecture, three hours.** Requisites: courses 131A, 131B, 132, and 134 and 135, or 146. Spectral theory of regular boundary value problems and examples of singular Sturm/Liouville problems, related integral equations, phase/plane analysis of nonlinear equations. S/U or letter grading.

In practice, the above description will mostly apply, but with some tweaking. We’ll certainly discuss phase planes (and generalize a bit to higher dimensions) and boundary-value problems. For the latter, an important topic is Green’s functions. Sturm–Liouville problems will show up at some point. There will also be some salient ODE theory and other topics.

(b) Material from this course can show up on the Applied Differential Equations qualifying exam. If you look at the past exams that have been posted online, you'll notice quite a few questions about topics related to phase-plane analysis and Green’s functions (and boundary-value problems), with occasional questions related to ODE theory. You should take a look for yourself at [https://secure.math.ucla.edu/gradquals/hbquals.php](https://secure.math.ucla.edu/gradquals/hbquals.php).

(c) In addition to the core topics, the other topics are important in many applications and are meant to enrich you, and they will hopefully provide inspiration for topics to study in further detail.

2. Coordinates

(a) **Classes:** Humanities Building A26, MWF 2:00–2:50 pm

(b) **Discussion Sections:** MS 5137, Tu 2:00–2:50 pm

3. Main Texts

(a) Carl M. Bender and Stephen A. Orszag (BO), *Advanced Mathematical Methods for Scientists and Engineers*

(b) For salient discussions of numerical computations, take a look at the new book, *Exploring ODEs* by Trefethen, Birkisson, and Driscoll, which will be published shortly by SIAM. You can download it for free at [https://people.maths.ox.ac.uk/trefethen/ExplODE/](https://people.maths.ox.ac.uk/trefethen/ExplODE/). It includes .m files, so you can play with things directly in MATLAB.

(c) There will also be material from other sources, though we will start by going through chapters 1, 3, and 4 of BO (with possible diversions from other sources for more detail on some topics), and we’ll then proceed from there. I’ll suggest some useful sources later.

4. TA

(a) Dohyun Kwon (dhkwon@g.ucla.edu)

5. Office Hours

(a) **My office hours (7619B):** to be determined (Doodle poll to come)

(b) **Dohyun's office hours (MS 6153):** M 3:15–4:15 pm, Tu 3:00–4:00 pm

6. Grading

(a) **Homework (1/3):** There will be some number \(N\) of homework assignments. Most likely, \(N\) will be either 6 or 7. I will use \(N - 1\) in the denominator instead of \(N\) when determining the homework component of the total score in the class.
(b) **2 Midterms (1/3):** There will be two midterms (Mon. 11/6 and Wed. 11/29), each of which is worth 1/6 of the total score. They will be taken during class.

(c) **Final (1/3):** There will be a final exam at the end of term (Thursday 12/14, 8:00–11:00 am).

(d) **Final Grades:** I’ll determine the final scores as above and then determine grades from those scores with a curve, depending on the scores.

(e) **Note:** Exams must be taken during the scheduled times. There will be no make-up exams, with the exception of serious medical emergencies or university-approved absences. A grade of ‘F’ will be assigned to any student who misses the final exam. Incompletes are reserved for those who have completed all of the work for the class, including midterm exams, but who, for a legitimate, documented reason, miss the final exam.

7. **Note:** I will be away Monday 11/6 (midterm 1 day), Wednesday 11/8, Monday 11/27, and Wednesday 11/29 (midterm 2 day). I will figure out later how we will handle 11/8 and 11/27.

8. **Homework Format:** Homework will include both paper-and-pencil work and computer work (e.g., numerics), though it will focus primarily on the former.

   Due dates and submission instructions will be indicated on each homework assignment.

9. **Other Notes**
   
   (a) **Late policy:** Late submissions will not be accepted. (Generosity, and allowing for life’s circumstances, is already built into the homework grading.)

   (b) **Appeals:** As a rule of thumb, you should only appeal on correctness (not on the amount of partial credit that you received). Any such requests will only be considered within 7 days of when I return an assignment or exam and no later than Friday 15 December.

   (c) Students needing academic accommodations based on a disability must contact the Center for Accessible Education (CAE) at 310-825-1501 or present in person at Murphy Hall A255. As the professionals delegated authority from the camps to determine reasonable disability accommodations, CAE will assess all requested accommodations and communicate appropriately with faculty. In the event that a student has approval for proctoring arrangements during exams, please inform your respective professors and/or Teaching Assistant(s) before the date of exam(s). When possible, students should contact the CAE within the first two weeks of the term, as reasonable notice is needed to coordinate accommodations. For more information, visit [www.cae.ucla.edu](http://www.cae.ucla.edu).