

Math 046: Introduction to Ordinary Differential Equation
UC Riverside Spring 2020 Section 030

Instructor (interim): Yat Sun Poon. Office: Skye252, Email: ypoon@ucr.edu
 Instructor (guest): Francesco Pancaldi, Office: Life Science 2400, Email: francesp@ucr.edu
 Lectures: WF 12:30~13:50, Room: <https://ucr.zoom.us/j/2909555739>
 Office hours: WF 14:00~15:00 or by appointments.
 TA: Mingye Gao, Th 18:00~18:50
 Cecilia Duran, Th 14:00~14:50
 Ryan Ta, Th 17:00~17:50

| Tentative Schedule for Math046 Ordinary Differential Equation Sec 1 Spring 2018 | | |
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| Date | Topic Description | Text Ch. |
| Apr 1 | (Introduction); Definitions and Terminology | 1.1 |
| Apr 3 | Initial-Value Problems; Solution Curves Without a Solution | 1.2, 2.1 |
| Apr 8 | Separable Equations | 2.2 |
| Apr 10 | Linear Equations | 2.3 |
| Apr 15 | Exact Equations | 2.4 |
| Apr 17 | Solutions by Substitution | 2.5 |
| Apr 22 | A Numerical Method; Differential Equations as Mathematical Models | 2.6, 1.3 |
| Apr 24 | Linear Models; Nonlinear Models; Modeling with Systems of First-Order DEs. | 3.1, 3.2, 3.3 |
| Apr 29 | Review | |
| May 1 | Midterm | |
| May 6 | Preliminary Theory – Linear Equations | 4.1 |
| May 8 | Reduction of Order | 4.2 |
| May 13 | Homogeneous Linear Equations with Constant Coefficients | 4.3 |
| May 15 | Undetermined Coefficient – Superposition Approach | 4.4 |
| May 20 | Undetermined Coefficient – Annihilator Approach | 4.5 |
| May 22 | Variation of Parameters | 4.6 |
| May 27 | Cauchy – Euler Equations | 4.7 |
| May 29 | Green's Functions (I) | 4.8 |
| Jun 3 | Green's Functions (II) | 4.8 |
| Jun 5 | Final Review | |

Course Description: This is a course on the standard basic material of ordinary differential equations. We will cover first-order equations, homogeneous second-order equations, linear second-order equations, higher-

order linear equations, initial value problems and elementary applications to the physical and biological sciences.

Textbook: We will cover the first 4 chapters of the book “Differential Equations with Boundary Value Problems” by Dennis Zill, 9th Edition, ebook available on Cengage/Webassign
(Optional) “Schaum’s Outline of Differential Equations”, 3rd, by Bronson and Costa.

Grading:

Course grades are determined by the combined total of the online homework (15%), the written homework (15%), the midterm exam (30%) and the final exam (40%). We will drop the lowest written homework and the lowest two online homework.

Online Homework (15%):

Class to class online homework and the due date will be posted on Webassign. Usually it will be open before each lecture and due before the next lecture. Answers will be posted after the due time. By doing this online homework, you get immediate feedback and it makes sure that we are all ready for the coming class.

Written Homework (15%):

Weekly homework set will be posted on iLearn (usually on Wednesday) and is due the following week in the discussion section on Thursday. Feel free to discuss your work with your peers, but solutions must be submitted by each student. To get full credit you must show your work (not simply your answers), and your work should be clear enough to be understood by the Teaching Assistant.

Midterm Exam (30%) and Final Exam (40%):

The midterm exam will take place during the lecture time on May 1st. The final exam will be on Monday, June 8th, 3:00 pm~6:00 pm. Electronic devices and books may not be used during the exams. Practice exams and practice problems will be provided before the midterm and the final. The final exam will be cumulative.

Policies on late homework and missed exams:

In the spirit of fairness of grades and respect for the time of our TA, late homework will receive no credit. Only under extreme personal or medical emergencies will makeup exams be given in accordance with UCR policies. Written verification (from physician, lawyer, judge, parole officer, etc.) will be required for any makeup exam.

Help with the material:

You are encouraged to ask for help when needed. A few questions answered at the right moment can make the difference for you to succeed in this course. Feel free to contact Jolene, Ramos or me. We would be very happy to help you.

Lecture notes:

Lecture notes will be posted the day before each class. THESE NOTES ARE NOT A SUBSTITUTE FOR ATTENDING CLASS. However, you are encouraged to look at the note before class and use the note during class to help you (either print out a hard copy or view it on a device). Please post questions or comments to the discussion board. It will help me to explain the material better in class to you and your classmates.

Due to UCR’s policy to limit the campus community’s exposure to the COVID-19 virus, instructions for the entire spring quarter will be held online. Please read the following carefully and be prepared and equipped to attend classes online.

Lectures and Discussion Sections:

Lectures will be delivered online via Zoom. The instruction is synchronous, meaning that you will be face-to-face via Zoom with your instructor in lecture. The lectures have definite meeting times and attendance is mandatory.

Discussion sections will be conducted online through Piazza – a collaborative and interactive question-and-answer platform. To access Piazza, click on the “Student Tools” link on iLearn and then the Piazza link on the next page. If you have never used Piazza before you might have to activate your account by following the instructions on the screen.

Midterm and Final: The modality of administration of midterm and finals has currently not been determined please check announcements on iLearn.

Online Etiquette

The online nature of the class requires us to pay special attention to our behavior. Background noise should be reduced to a minimum. Be sure to mute yourselves when you are not speaking in order to reduce background noise. Headset typically could help to reduce background noise when you are speaking. Arrange for yourself a quiet location while you are in class. Remember that, although you are online, you are still in a classroom and you should dress appropriately. The instructor and other students will, in general, be able to see you more clearly than we would in a physical classroom. The instructor reserves the right to videotape each online lecture, discussion section, and office hour for record keeping purposes.

Cheating will be taken very seriously. Every attempt to cheat will give you an automatic "F" for the course. You will not be allowed to drop the course, and your case will be forwarded to the student conduct committee.

Students with Disabilities: UC Riverside is committed to providing equal access to learning opportunities to students with documented disabilities. To ensure access to this class, and your program, please contact the Student Disability Resource Center (SDRC) to engage in a confidential conversation about the process for requesting accommodations in the classroom. More information can be found on <https://sdruc.ucr.edu>. If you are a student registered with the SDRC, please ensure you request your quarterly accommodations through sdruc.ucr.edu.

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If you do so, you may be subject to student conduct proceedings under the UC Riverside Student Code of Conduct, Section 102.23.

Similarly, you own the copyright in your original papers and exam essays. If I am interested in posting your answers or papers on the course web site, I will ask for your written permission.

Grading Scale (Tentative)

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|----|-----|---------------------------|---|
| A+ | 4.0 | 94– | Excellent: The grade of "A+", when awarded at the instructor's discretion, represents extraordinary achievement, but does not receive grade point credit beyond that received for the grade of A. |
| A | 4.0 | 100% | |
| A- | 3.7 | 94– 100% 90– 93% | |
| B+ | 3.3 | 86– | Good |
| B | 3.0 | 89% | |
| B- | 2.7 | 83– 85% 80– 82% | |
| C+ | 2.3 | 76– | Fair |
| C | 2.0 | 79% | |
| C- | 1.7 | 73– 75% 70– 72% | |
| D+ | 1.3 | 66– | Barely passed |
| D | 1.0 | 69% | |
| D- | 0.7 | 63– 65% 60– 62% | |
| F | 0.0 | < 60% | Failed |