

MATH445: Mathematics of Physics and Engineering II

Spring 2021

Lectures: Monday, Wednesday, Friday on Zoom from 12:00 - 12:50 LA time.

Instructor: Tommaso Cremaschi.

Office: 438D Kaprielian Hall.

Email: cremasch@usc.edu. You can address me as Tom. I usually reply in 24hrs if I don't feel free to bug me again. Any questions are welcomed however, if you have a specific math question and the answer is more complicated than a yes/no I might just tell you to come to office hours.

Office Hours: TBA or By appointment.

Textbook: E. Kreyszig. Advanced Engineering Mathematics, 10th Ed. Wiley, 2011.

Prerequisite: 1 from (MATH 245 or (MATH 225 and MATH 226) or (MATH 225 and MATH 227) or (MATH 225 and MATH 229)).

Course description: The course is a natural continuation of Math 245, covering some of the fundamental tools of Applied Mathematics, Physics and Engineering. It starts with the main concepts and theorems from Vector Calculus (familiar to those who have taken Math 226 previously), followed by the fundamentals of Complex Analysis. Next, the Fourier series and transform are introduced as an important tool for the analysis of Partial Differential Equations, which is the next topic of the course. The last two weeks will be devoted to the study of power series methods for ODEs and their application to some relevant equations often arising in applications (Bessel's, Legendre's, etc.)

Blackboard: Weekly homework assignments and grades will be posted on Blackboard <http://blackboard.usc.edu>. It is everyone's responsibility to visit the website on a regular basis.

Teaching Assistant: TBA

Email: TBA

Office Location: TBA, check:

<https://dornsife.usc.edu/mathcenter/consulting-hours/>

Office Hours: TBA

Discussion sections: 8-8:50/9-9:50 on T and Th (check which one you are in).

Math Center: The Math Center is located online (<https://usc.zoom.us/j/93937041937>) and is open on Monday-Friday from 10am to 9pm on most days. It is primarily run by math graduate students here at USC. The office hours of your TA will also be held in the Math Center, although you can go to the Math Center at any time it is open to ask for help.

Homework: Homework will be assigned at the end of each week. It will not be collected or graded, but working on it is key to succeed on quizzes/midterms/final and should be attempted right after the corresponding material is covered in the lecture.

Quizzes: There will be weekly quizzes, given during your Thursday discussion sections. Each quiz will contain problems from homework questions due that week. There will be no make-ups on quizzes for any reason, but your lowest **two** scores will be dropped.

Exams: There will be exactly 3 exams. The first two will be held in our regular room and time. If you cannot be there on the date of an exam, you must contact me at least 48 hours **before** the exam to make other arrangements. If you no-show for an exam and attempt to contact me afterward, do not expect to be allowed a make-up exam.

The Final will be a **cumulative** exam. It is university policy that no student may take this exam early or be allowed to skip it, so plan your holiday travel appropriately.

- **Exam 1:** Last full week of February, Friday 2/26.
- **Exam 2:** First full week of April, Monday 4/9.
- **Final Exam:** TBA.

If there is a scheduling conflict for an exam, you must let ME (NOT the TA) at least 2 weeks before the examination. A scheduling conflict must involve an activity sponsored and approved by USC (marching band, athlete event,

etc.). In particular, the university club or organisation in question must send an official request, with the Dean's approval, to all faculty. Personal activities do not qualify. **FAILURE TO ATTEND AN EXAMINATION WILL NOT BE EXCUSED UNDER NO CIRCUMSTANCES.**

No cheat sheet, calculator, cell/smart phone or other electronic device will be allowed during examination.

Exam/Assignment Policy: For quizzes and exams you may use notes, internet and whatever calculator you want. Just make sure to show work on the actual assignment. You are not allowed to have another person in the room during exams/quizzes or ask help from another human being.

Catastrophic internet failure: In the unfortunate event that my internet cuts down (say for 5+ minute) and I am unable to resume the lecture I will separately record the full lecture and upload it to blackboard.

Policy on academic dishonesty: Don't cheat. If you have questions about what constitutes "cheating", or what will happen if you are caught, please review the Trojan Integrity Guide, the Undergraduate Guide for Avoiding Plagiarism, or the General USC Policies.

Grading and Curves: Your grade for the course will be calculated as follows:

- Quizzes: 25%
- Midterms: 20% each
- Final: 35%

Individual exams and quizzes will **not** be curved, except in the rare case of a typo or error that makes a question unsolvable.

At the end of the course, it is **possible** that final letter grades may be adjusted to reflect the final distribution of the scores in the class. Such a curve would always be in your favour, else the standard 10-point interval from the raw score would apply. However, no one will know if such a curve is necessary, or what the curve would be, until all grades are in and all drops are made. Don't bother asking if there will be a curve, because even if I knew, I wouldn't tell you.

Grading disputes If you feel that a mistake was made in grading your homework, quizzes or exams or that these scores have been incorrectly recorded in Blackboard, bring it to my within 10 days of the due date of the homework/quiz/exam. Any complaints received later will not be considered. Be aware that a re-grade means that your work will be graded from scratch, and it

is entirely possible that you will receive a lower score than originally given, if I decide that the original grade was too high.

Policy on disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in 301 STU and is open 8:30am-5:00pm, Monday through Friday. Website and contact information for DSP:

http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html
 213-740-0776 (phone)
 213-740-6948 (TDD only)
 213-740-8216 (fax)
 ability@usc.edu

Tentative course schedule. *We will try* to follow this schedule.

Week	Sections	Dates
1	Chapter 9, Sections 7-9	18-22 January
2	Chapter 10, Sections 1-2	25-29 January
3	Chapter 10, Sections 3-5	1-5 February
4	Chapter 10, Sections 6-8	8-12 February
5	Chapter 10, Section 9, Chapter 13 Section 1-2	15-19 February
6	Chapter 13, Sections 3 - Midterm I	22-26 February
7	Chapter 13, Sections 4-5	1-5 March
8	Chapter 11, Sections 1-2	8-12 March
9	Chapter 11, Section 2-3	15-19 March
10	Chapter 11, Sections 4,7,9	22-26 March
11	Chapter 12, Sections 1-4	29 March - 2 April
12	Chapter 12, Sections 5-6 - Midterm 2	5-9 April
13	Chapter 12, Sections 7-9	12-16 April
14	Chapter 12, Section 10 - Chapter 5, Section 1	19-23 April
15	Chapter 5, Sections 2-4	26-30 April