MATH 199C – SYLLABUS

Welcome to Math 199C, a Partial Differential Adventure awaits you! This is the survival manual for this course, where you can find all the administrative info you need to know, such as office hours, grading, and other goodies. Feel free to e-mail me if you have any other questions.

- **Instructor:** Peyam ($\pi - m$) Ryan Tabrizian
- **E-mail:** drpeyam@gmail.com
- **Office:** The Internet
- **Class Meeting Times:** No official meeting time or place. The W 4-5 pm slot will be used to hold **optional** virtual office hours, in case you have questions about the reading.
- **Office Hours:** Tu 4-5 pm (subject to change) and W 4-5 pm. Office hours will be held via Zoom (or YouTube); I will send you the meeting link beforehand. Tuesday's OH will be shared with my Math 140A class, but Wednesday's OH is dedicated to you. Also, if you *ever* want to meet individually via Zoom, please do not hesitate to ask and we can arrange for a virtual meeting.
- **Course Content:** In this course, we'll discuss the 3 most important PDE: Laplace's equation, the Heat Equation, and the Wave Equation. Unlike Math 112A, which focuses on computational side, this

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course focuses more on the theory behind those equations, like "How smooth are solutions to the heat equation?" or "How do you *prove* the mean value formula for Laplace's equation?" This course should give you a glimpse at how mathematicians deal with PDE.

- **Online resources you can use:**
  - Course website: This is the main course website, where you can find the readings, some lecture notes, YouTube videos, and suggested homework
  - Dr Peyam: My YouTube channel; Here is where you can find useful PDE videos related to the readings. In particular, check out the playlist for the course: PDE playlist. I'll try to make more videos as the quarter progresses. There's a related playlist (that was used for Math 112A) that is also useful: Old Playlist
  - Campuswire: A platform like Piazza, but (apparently) way cooler, where you can post questions and your classmates can answer them. I will not monitor this much, but hopefully it'll be useful for you

- **Textbook:** *Partial Differential Equations* (Second Edition) by Lawrence C. Evans (my PhD advisor at UC Berkeley), ISBN 978-0821849743. This is the Bible of PDEs, and it's the book that is used in graduate level PDE courses like Math 295ABC. We'll go over Chapter 2 of the book (also chapter 1, but it's quick). It is **very** dense, but we'll go over it very slowly, to make it more manageable.

- **Prerequisites: At least** Math 140A, but ideally as much analysis as you can, so Math 140B would be even better, and Math 140C would be absolutely ideal. That said, you do **not** need to have taken Math 112ABC, we'll basically learn it from scratch.

- **Grading:** Super easy! I really want you to spend as much time on this course as you want without being worried about your grade. In order to pass the class, every week you have to do **one** of the following, due by **Friday at 5 pm PST**. You do **not** get extra credit if you do more than one thing:

  - Send me an e-mail, asking a question about the reading. Your question should be more elaborate than "Why is there a minus sign on page 19?"
  - **OR:** Write a short (about 10 lines) paragraph summarizing the reading that you have done and send it to me by e-mail
  - **OR:** Post a question on Campuswire. In order to count, your question should be more elaborate than "Why is there a 2 there?" But please feel free to post smaller questions on that platform as well, that's what it's there for.
  - **OR:** Answer a question on Campuswire that someone else posted, as long as it's a bit more elaborate than 'yes' or 'no' or a 1 line response. Again, the purpose is that you need to show me that you've done the reading.
  - **OR:** (Consider this as a last resort) E-mail me the solutions of **two** problems of the suggested homework. It's easy because the solutions are already online, so it's just copying down everything. Sometimes there are no suggested HWs, so plan ahead!

  Office hour attendance does **not** count towards this, because I cannot check attendance if it gets too hectic. Also, I will let you know every week in case you haven't completed your assignment.

  Note: All this applies starting from week **2**, since everyone is still getting set up in week 1. In addition, you get one wildcard, meaning that once, you are allowed to skip work **once** without any penalty;

please use this for an emergency. If you skip work more than once (other than week 1), you will fail this course.

- **Grading Option:** This class will be graded on a **P/NP basis**, so please switch your grade option to P/NP if you haven't already.
- **Letters of Recommendation:** Since there are 30 students enrolled in this class, this course is not the best course to get a letter of recommendation from me. Also, this is just a reading course, not a research course. You will **not** gain any research experience from my class, but it should give you a good taste of what graduate-level math classes are like.
- **Finally:** Sit back, relax, and enjoy the show! Remember that this course is fun and enlightening! I'm really looking forward to an exciting virtual quarter together! :) On my website, you'll find a schedule to the readings.