MATH 5440-6850 Intro Part Diff Eqns, Fall 2020

Class Meetings: MWF 10:45am - 11:35am through Interactive Video Conferencing (IVC - Synchronous Online)

Instructor: Prof. Yekaterina Epshteyn
Email: epshteyn@math.utah.edu

Contact: Questions and concerns should be communicated in office hours or via email. In most cases, I will reply to emails before 11:59pm the next business day (business days = all days except Saturdays, Sundays, and university holidays).

Meetings, Course Materials and Office Hours: Classes and office hours will be held on Zoom; meeting information will be posted on Canvas at the start of the semester. I expect to post slides of the lectures in Canvas after IVC lectures, **but students are strongly recommended to attend each IVC lecture. Students are not allowed to distribute any course materials/resources without instructor permission.** Office hours are TBD.

Zoom: You will need to use Zoom for lectures and office hours. If you don’t have Zoom you can download it for free from zoom.us/download. It is strongly encouraged that you have a webcam and microphone to fully participate in the class during lectures but you should not need anything else. It is possible to dial in to hear the audio with just a phone. I will set up Zoom meetings for lectures and office hours. During class time I ask that everyone keep their microphones muted to eliminate background noise. You can unmute yourself if you would like to ask question, but please mute yourself back after the question. When speaking, please turn on your video if possible, if it wasn’ already on.

Technical requirements: To attend the IVC lectures (live lectures online) you will need a computer with the Zoom software and a relatively strong internet connection. A microphone and camera are strongly recommended for class attendance but not strictly required.

If you don't have a laptop, you can loan one from the Marriott library and you can also learn about different wifi options. Please check for the detailed information at: https://lib.utah.edu/coronavirus/checkout-equipment.php

Text and References:

Additional References:
An Introduction to Partial Differential Equations, by Yehuda Pinchover and Jacob Rubinstein, Cambridge

Course Description: Students will learn about classical partial differential equations, including the Laplace, heat, and wave equations. They will employ several analytical methods, including Fourier analysis, Green’s functions, and the method of characteristics.

Prerequisite Information: "C" or better in MATH 2280 or MATH 3140 or MATH 3150. MATH 3210 (Foundations of Analysis I) is recommended but not strictly required for this class.

Canvas: Canvas will be used for lectures, office hours, posting course announcements, files and relevant information. You can access the Canvas page through CIS or by logging in at utah.instructure.com. Students should check the Canvas page regularly for course information and resources. Email notifications and correspondence will be sent to the student’s UMail address ([u-number]@utah.edu); this email account must be checked regularly.

Reading and Lectures: Prior to class meetings, students are expected to read, and to be prepared to
discuss, course material in the text.

**Grading:** The following are the grade components and the percentage each contributes to a student’s final grade:

- **Homework Assignments (70%)**- Homework will be assigned (approximately once in two weeks or so) and collected. *Homework should be clearly written with sufficient details, should be typed and submitted as a single pdf file via Canvas. No handwritten homework will be accepted and No late homework will be accepted.*
  
  I encourage you to work on the homework in groups, but, of course, what you write should be in your own words.

- **Written paper, 5-10 pages, (30%)**: You will be given a list of selected partial differential equations (PDE) topics. You would need to prepare a clear and self-contained presentation on the PDE topic of your choice (from a given list of topics). You can use different sources for your written paper (various books, online sources, etc.) but you must provide complete references in the paper on the sources that you employed. The paper should be typed and submitted as a single pdf file (no handwritten paper and no late paper will be accepted).
  
  As a hypothetical example, if you selected to write about Laplace’s equation, you will need to present Laplace’s equation in 2D and/or 3D. You would need to discuss different properties of Laplace’s equation and present proofs of some of the properties. You can discuss examples of special solutions to Laplace’s equation and you can discuss examples of application of the Laplace’s equation, etc.

- **Exams**: It will be No Exams for this Course.

**Assignments Due Dates:** Assignments due dates will be announced and posted in Canvas

**Graduate Students:** You can take this course at the graduate level (Math 6850). The lectures are the same for everyone, but there may be extra problems for graduate students. If you are not a graduate student at the U yet, then instructor consent is required for registration for Math 6850.

**Some Important Dates:** Classes begin - Aug 24; Last day to add, drop (delete), elect CR/NC, or audit classes - Sept 4; Last day to withdraw from classes - Oct 16; Classes end - Dec 3.

Final course letter grades will be determined as follows: If X is your course percentage weighted according to the above, then \(X \geq 93\% \Rightarrow A, X \geq 90\% \Rightarrow A-, X \geq 87\% \Rightarrow B+, X \geq 83\% \Rightarrow B, X \geq 80\% \Rightarrow B-, X \geq 77\% \Rightarrow C+, X \geq 73\% \Rightarrow C, X \geq 70\% \Rightarrow C-, X \geq 67\% \Rightarrow D+, X \geq 63\% \Rightarrow D, X \geq 60\% \Rightarrow D-, X < 60\% \Rightarrow E\}.

The instructor retains the right to modify this grading scheme during the course of the semester; students will, of course, be well notified of any adjustments.

**COVID Specific Details:** Students must self-report if they test positive for COVID19 via http://coronavirus.utah.edu

**Student Responsibilities:** All students are expected to maintain professional behavior in the classroom online setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, and I will do so, beginning with verbal warnings and progressing to cancelling the class, dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee. http://regulations.utah.edu/academics/6-400.php
ADA Statement: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

University Safety Statement: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veterans status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677 (COPS).

Student Names and Personal Pronouns: Class rosters are provided to the instructor with the students legal name as well as Preferred first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise me of any name or pronoun changes (and update CIS) so I can help create a learning environment in which you, your name, and your pronoun will be respected. If you need assistance getting your preferred name on your UIDcard, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, or email bpeacock@sa.utah.edu to schedule a time to drop by. The LGBT Resource Center hours are M-F 8am-5pm, and 8am-6pm on Tuesdays.

Diversity and Inclusivity: It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. Your suggestions are encouraged and appreciated.

Undocumented Student Support Statement: Immigration is a complex phenomenon with broad impact on those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at (801) 213-3697 or https://dream.utah.edu.

Wellness Statement: Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a students ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.

Syllabus: This syllabus is meant to serve as an outline and guide for our course. Please note that I reserve the right to modify it with reasonable notice to you. Any changes will be announced in class and posted on Canvas under Announcements.