Math 3661 – Partial Differential Equations

Lecture Time: 10:00am – 11:50am (MW) Location: Knudson Hall 100

Textbook: Haberman,Applied Partial Differential Equations with Fourier Series and Boundary Value Problems 5th Ed.

Prerequisite: Math 2070 and Math 2080

Instructor: Mei Yin   mei.yin@du.edu
   Office and Office Hours: Zoom, 10:30am – 12:00pm (TR), or by appointment

Lecture Schedule: Here is a plan of the course (may be altered for pedagogical reasons as the course develops).

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| Ch. 1: Heat Equation | 2 weeks |
| Ch. 2: Method of Separation of Variables | 3 weeks |
| Ch. 3: Fourier Series | 2 weeks |
| Ch. 4: Wave Equation: Vibrating Strings and Membranes | 1 week |
| Ch. 10: Infinite Domain Problems: Fourier Transform Solutions of Partial Differential Equations | 2 weeks |

Course Description: Topics of study will include first and second order linear equations, Fourier series, the wave equation, the Cauchy problem, the heat equation, maximum principles, Laplace's equation, and Green's functions.

Tentative Calendar:

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| The Week Of | Material Covered |
| January 8 – January 12 | Introduction, 1.1, 1.2, 1.3 |
| January 17 | 1.4, 1.5 |
| January 22 – January 26 | 2.1, 2.2, 2.3 |
| January 29 – February 2 | 2.3, 2.4 |
| February 5 – February 9 | 2.5, Review |
| February 12 – February 16 | Midterm, 3.1 |
| February 19 – February 23 | 3.2, 3.3 |
| February 26 – March 1 | 4.1, 4.2 |
| March 4 – March 8 | 10.1, 10.2 |
| March 11 – March 15 | 10.3, 10.4 |
| March 18 | Review |

Grading: Your final grade for the course will be determined based on a numerical weighted average calculated as follows:**Homework 30% Midterm 30% Final Exam 40%**. This average percentage will then be converted into a final letter grade based partially on how other students perform this quarter, and partially on typical percentage grades from previous quarters of the course.

Homework: Homework will be assigned about once a week. **The due date is every Monday at the beginning of the class.**Homework must be turned in promptly to receive credit. For submitted problems, students are expected to show work and justify their answers. Please write your name on the first page. If you are submitting multiple pages, please staple them together. **The eight highest homework scores will contribute to 30% of your final grade**.

Exams: A **midterm** is tentatively scheduled **during class time** on **Monday, February 12**. The **final exam** is scheduled on **Wednesday, March 20** at **10:00am – 11:50am** in **our usual classroom**. Makeup exams will only be offered in the event of extreme circumstances. If you think you have a problem which will force you to miss an exam, come talk to me as soon as possible.

Help: **Additional handouts will be distributed throughout the quarter**. Students are also encouraged to ask for individualized help from the instructor at any time.

Students with Disabilities: If you qualify for academic accommodations because of a disability or medical issue, please submit a faculty letter to me from AccessibleDU: Student Disability Services (SDS) in a timely manner so that your needs may be addressed. SDS determines accommodations based on documented disabilities/medical issues. SDS is located in Suite 22 on the lower level of Driscoll South, 303-871-3241. Information is also available online at <https://studentaffairs.du.edu/disability-services-program>.

Honor Code: Follow the [Honor Code](https://studentaffairs.du.edu/student-rights-responsibilities/honor-code) in all activities related to this course. Incidents of academic misconduct will be reported to and investigated by the Office of Student Conduct.

Inclusive Learning Environment: In this class, we will work together to develop a learning community that is inclusive and respectful. Our diversity may be reflected by differences in race, culture, age, religion, sexual orientation, socioeconomic background, and myriad other social identities and life experiences. The goal of inclusiveness, in a diverse community, encourages and appreciates expressions of different ideas, opinions, and beliefs, so that conversations and interactions that could potentially be divisive turn instead into opportunities for intellectual and personal enrichment.

A dedication to inclusiveness requires respecting what others say, their right to say it, and the thoughtful consideration of others' communication. Both speaking up and listening are valuable tools for furthering thoughtful, enlightening dialogue. Respecting one another's individual differences is critical in transforming a collection of diverse individuals into an inclusive, collaborative and excellent learning community. Our core commitment shapes our core expectation for behavior inside and outside of the classroom.

Religious Accommodations: University policy grants students excused absences from class or other organized activities for observance of religious holy days, unless the accommodation would create an undue hardship. Faculty are asked to be responsive to requests when students contact them **in advance** to request such an excused absence. Students are responsible for completing assignments given during their absence, but should be given an opportunity to make up work missed because of religious observance. Once a student has registered for a class, the student is expected to examine the course syllabus for potential conflicts with holy days and to notify the instructor by the end of the first week of classes of any conflicts that may require an absence (including any required additional preparation/travel time). The student is also expected to remind the faculty member in advance of the missed class, and to make arrangements in advance (with the faculty member) to make up any missed work or in-class material within a reasonable amount of time.

Other: Check the **DU academic calendar** for important dates throughout the quarter: <http://www.du.edu/registrar/calendar/index.html>.

Note: Homework assignments on this page are subject to change.The website is always the most accurate source for assignments, so if you print out a copy of this page early, check the web each week to make sure the problems have not been changed. Your teacher will also call attention to it whenever any change is made.

**Work the following homework problems at the appropriate time.**

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| Chapter # | Problems |
| 1 | 1.2.1, 1.2.2, 1.2.4, 1.2.6, 1.2.8, 1.3.1, 1.3.2, 1.4.1 (a-e), 1.4.5, 1.4.7 (a-c) |
| 2 | 2.2.4, 2.2.5, 2.3.1 (a, c, e), 2.3.2 (a, b, d), 2.3.3 (a, c), 2.3.5, 2.3.7, 2.3.8, 2.4.1 (a, b), 2.4.3, 2.4.4, 2.5.1 (a, c, d), 2.5.28 |
| 3 | 3.2.1 (a, c, e), 3.2.2 (a, c, f), 3.2.3, 3.3.1 (a, c), 3.3.2 (a, c) |
| 4 | 4.2.1, 4.2.5, 4.4.1 |
| 10 | 10.3.1, 10.3.2, 10.3.3, 10.3.5, 10.3.6, 10.3.7, 10.3.11, 10.4.3, 10.4.4, 10.4.6, 10.4.7 (a, b, c) |