MATH 4347: Partial Differential Equations I

Section BG + BU | 3 credit hours | Fall 2026

Instructor Information

Instructor: Dr. Gong Chen

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Office: Skiles 211A

Lectures: Monday and Wednesday, 11:00 a.m.–12:15 p.m., Skiles 308

Office hours: Monday, 2:30 p.m.–3:30 p.m., Skiles 211A, and by appointment if necessary. Regular office hours begin on August 31.

General Course Information

Description

This course is an introduction to partial differential equations. We plan to cover Chapters 1–7 of Walter A. Strauss, *Partial Differential Equations: An Introduction*, 2nd edition. Main topics include first-order partial differential equations, the method of characteristics, conservation laws and shocks, classification of second-order equations, boundary value problems, separation of variables, Green's functions, and fundamental solutions.

Course Learning Outcomes

Upon successful completion of this course, you should be able to:

- solve first-order partial differential equations using the method of characteristics;
- analyze basic conservation laws and describe the role of shocks;
- classify second-order partial differential equations as hyperbolic, parabolic, or elliptic, and recognize model examples of each type;
- apply standard techniques such as separation of variables and Fourier series to boundary value problems; and
- use Green's functions and fundamental solutions in elementary settings.

Prerequisites

MATH 2403 or MATH 2413 or MATH 24X3, and MATH 2406.

Required Course Materials

Required textbook: Walter A. Strauss, *Partial Differential Equations: An Introduction*, 2nd edition (Wiley, 2008).

Course announcements, homework logistics, and grades will be managed through Canvas and Gradescope.

Grading Policy

Your course grade will be computed using the following weights:

- Homework: 25%
- Midterm Exam 1: 20%
- Midterm Exam 2: 20%
- Cumulative Final Exam: 35%

Standard grade cutoffs are:

- A: 90% to 100%
- B: 80% to less than 90%
- C: 70% to less than 80%
- D: 60% to less than 70%
- F: below 60%

These cutoffs may be adjusted only in the downward direction, meaning any curve would only help students.

Description of Graded Components

- **Homework:** There will be about 7 homework assignments, due approximately every two weeks. You must complete all assigned problems, but only a subset may be graded. Late homework will not be accepted. If the course reaches an 80% CIOS response rate, the lowest homework score will be dropped.
- **Midterm Exam 1:** In person, closed book, no calculator. Planned date: September 23, 2026, during class.
- **Midterm Exam 2:** In person, closed book, no calculator. Planned date: October 28, 2026, during class.
- **Final Exam:** In person, cumulative, closed book, no calculator. The final exam lasts 2 hours and 50 minutes and will be scheduled during the official final-exam period.

Course Policies

Attendance and Participation

Regular attendance and active participation are strongly encouraged. If you miss class, you are responsible for all missed material, announcements, and schedule updates. Lecture notes will be posted on Canvas at least once each week.

Collaboration Policy for Graded Work

You are encouraged to discuss homework problems with classmates, but you must write up your solutions independently and in your own words. When preparing homework, use only material covered in class or in the textbook up to that point. Write clearly in complete sentences. If your submitted work is not legible, it will not be graded. Homework may be handwritten or typeset, but it must be properly scanned before upload.

Missed or Late Work

Late homework will not be accepted. Missed midterm or final exams may be rescheduled only in exceptional cases, such as institute-approved absences, approved religious observances, serious illness, or family or personal emergencies with appropriate documentation. Early travel plans, including already-purchased tickets, are not an acceptable reason to miss an exam. Otherwise, missed work receives a zero.

Regrades

Homework and midterm exams will be graded through Gradescope. Once a homework or midterm exam is returned, you will have one week to submit a regrade request through Gradescope. Late regrade requests will not be considered. A regrade request does not guarantee a higher grade.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review the Georgia Tech Honor Code and the student Code of Conduct.

Any evidence of cheating or other violations of the Honor Code will be reported to the Office of Student Integrity. Prohibited conduct includes copying from classmates, tutors, internet sources, solution manuals, or artificial-intelligence tools on work where such use is not authorized; allowing another person to copy your work; submitting work in another person's name; or requesting a regrade on altered work.

Accommodations for Students with Disabilities

If you need classroom or testing accommodations, please contact the Office of Disability Services as soon as possible to discuss the appropriate process and obtain an accommodations letter. Please also email me promptly so that we can discuss implementation of approved accommodations.

Communication, Recording, and Classroom Expectations

For questions about course structure or policies, please consult the syllabus and Canvas first. Questions about course material should normally be asked in office hours rather than by email. Lectures will not be recorded unless required by an approved accommodation. Students may not record or distribute class materials without the instructor's permission or an approved accommodation. Please be prepared, arrive on time, and avoid classroom disruptions.

Important Dates and Resources

The following institute dates are especially relevant for this course:

- First day of classes: August 24, 2026
- Labor Day holiday: September 7, 2026
- Fall break: October 5–6, 2026
- Final instructional class days: December 7–8, 2026
- Reading period: December 9, 2026, with additional reading/conflict periods during finals
- Final exam period: December 10–17, 2026

For the most current institute deadlines and exam scheduling information, consult the Georgia Tech future academic calendar and the Georgia Tech final exams information page.

Permits and Waitlists

Faculty cannot assist with permits or waitlist issues. Please use the Registrar's waitlist guidance and the School of Mathematics permits and waitlists page.

Student-Faculty Expectations

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.