

## Math 3420 – Differential Equations II – Fall 2023

**Place:** Language Building 113 (Lang 113)

**Time:** Tuesday & Thursday 3:30PM - 4:50PM

### Instructor Contact

**Name:** Giordano Tierra Chica

**Office Location:** General Academic Building 471A

**Office Hours:** Tuesday & Thursday 11:00AM - 12:45AM

**Email:** [gtierra@unt.edu](mailto:gtierra@unt.edu)

**Communication Expectations:** The communication in this course will be through Canvas and email (only from UNT accounts).

### Course Description

We will discuss material related to the following topics as time permits:

Ordinary differential equations arising from partial differential equations by means of separation of variables; method of characteristics for first-order PDEs; boundary value problems for ODEs; comparative study of heat equation, wave equation and Laplace's equation by separation of variables and numerical methods; further topics in numerical solution of ODEs.

### Course Structure

This is a face to face course.

### Course Prerequisites or Other Restrictions

Math 2730 and Math 3310 or 3410

### Course Objectives

The aim of the course is to develop a practical understanding of basic aspects of Partial Differential Equations. The course is designed to introduce students to be able to derive the classical partial differential equations in mathematical physics, understand the various possible initial and boundary value problems you can pose for these equations, and be able to solve them in special cases. You should also get a basic understanding of Fourier series.

### Materials

Applied Partial Differential Equations with Fourier Series and Boundary Value Problems by Richard Haberman, Pearson, 5th edition (ISBN #: 9780137549702)

### Course Technology & Skills

#### Minimum Technology Requirements

You will need some electronic device that allows you to check Canvas, to read emails and to submit homework in digital form.

Computer Skills & Digital Literacy

Using Canvas and scanning documents (this can be done using a smartphone).

## Course Requirements

<b>Assignment</b>	<b>Points Possible</b>	<b>Percentage of Final Grade</b>
<b>Homework/Quizzes</b>	100 points	20%
<b>Exam I</b>	100 points	20%
<b>Exam II</b>	100 points	20%
<b>Exam III</b>	100 points	20%
<b>Final Exam</b>	100 points	20%

## Course Schedule (tentative)

**Week I to week V (from 08/22 to 09/19):** Heat Equation + Separation of Variables

**Week VI to week IX (from 09/26 to 10/17):** Laplace Equation + Fourier Series

**Week X to week XIII (from 10/24 to 11/14):** Wave Equation + Sturm-Liouville Problems

**Week XIV to week XV (from 11/28 to 12/05):** Higher Dimensional PDEs

**Last day of class (12/07):** Review

## Exam Dates

**Exam I:** Thursday 21st September

**Exam II:** Thursday 19th October

**Exam III:** Thursday 16th November

**Final Exam:** Tuesday 12th December, 1:30PM - 3:30PM

## Grading

A = [100,90], B = (90,80], C = (80,70], D = (70,60], F = (60, 0].

## Course Policies

### Attendance

Attendance is strongly recommended but not required. Students will need the lecture notes in order to prepare for the exams. The textbook by itself is not a suitable resource for exam preparation, since the lecture notes are not exactly the same as the material in the textbook, and the textbook contains much more material than is needed for exam preparation. Important information and announcements are oftentimes made during class time, and students are responsible for that information. Students who miss class have the responsibility to check the lectures notes and learn about any class announcements.

### Homework

Homework will be submitted electronically via Canvas. "Naked numbers are not acceptable." Solutions must include a short write-up describing the problem, your solution technique, and procedural details. All things must be clearly labeled with your name and the problem number or statement. Hand written work must include the steps for solution presented in a neat orderly fashion and in a fairly large size.

### Late Work

Late work is unacceptable. No make-ups.

## Welcome to UNT!

As members of the UNT community, we have all made a commitment to be part of an institution that respects and values the identities of the students and employees with whom we interact. UNT does not tolerate identity-based discrimination, harassment, and retaliation. UNT's full Non-Discrimination Policy can be found in the UNT Policies section of the syllabus.

## Rules of Engagement

Rules of engagement refer to the way students are expected to interact with each other and with their instructors. See these [Engagement Guidelines](https://clear.unt.edu/online-communication-tips) (https://clear.unt.edu/online-communication-tips) for more information.

## Online Course System

The University is committed to providing a reliable online course system to all users. However, part of working in the online environment involves dealing with the inconveniences and frustration that can arise when technology breaks down or does not perform as expected. Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.

**UIT Help Desk:** [UIT Student Help Desk site](https://www.unt.edu/helpdesk) (https://www.unt.edu/helpdesk)

**Email:** [helpdesk@unt.edu](mailto:helpdesk@unt.edu)

**Phone:** 940-565-2324

**In Person:** Sage Hall, Room 130

**Walk-In Availability:** 8am-9pm

**Telephone Availability:**

- Sunday: noon-midnight
- Monday-Thursday: 8am-midnight
- Friday: 8am-8pm
- Saturday: 9am-5pm

**Laptop Checkout:** 8am-7pm

For additional support, visit [Canvas Technical Help](https://community.canvaslms.com/docs/DOC-10554-4212710328) (https://community.canvaslms.com/docs/DOC-10554-4212710328)

## UNT Policies

### Academic Integrity Policy

According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

### ADA Policy

UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may

request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the [ODA website](https://disability.unt.edu/) (<https://disability.unt.edu/>).

#### Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)

The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.

#### Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

#### Retention of Student Records

Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

#### Acceptable Student Behavior

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT's [Code of Student Conduct](https://deanofstudents.unt.edu/conduct) (<https://deanofstudents.unt.edu/conduct>) to learn more.

#### Access to Information - Eagle Connect

Students' access point for business and academic services at UNT is located at: [my.unt.edu](https://my.unt.edu). All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail [Eagle Connect](https://it.unt.edu/eagleconnect) (<https://it.unt.edu/eagleconnect>).

## Student Evaluation Administration Dates

Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" ([no-reply@iasystem.org](mailto:no-reply@iasystem.org)) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the [SPOT website](http://spot.unt.edu/) (<http://spot.unt.edu/>) or email [spot@unt.edu](mailto:spot@unt.edu).

## Survivor Advocacy

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct. Federal laws and UNT policies prohibit discrimination on the basis of sex as well as sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking and/or sexual assault, there are campus resources available to provide support and assistance. The Survivor Advocates can be reached at [SurvivorAdvocate@unt.edu](mailto:SurvivorAdvocate@unt.edu) or by calling the Dean of Students Office at 940-5652648.

## Academic Support & Student Services

### Student Support Services

#### *Mental Health*

UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- [Student Health and Wellness Center](https://studentaffairs.unt.edu/student-health-and-wellness-center) (<https://studentaffairs.unt.edu/student-health-and-wellness-center>)
- [Counseling and Testing Services](https://studentaffairs.unt.edu/counseling-and-testing-services) (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- [UNT Care Team](https://studentaffairs.unt.edu/care) (<https://studentaffairs.unt.edu/care>)
- [UNT Psychiatric Services](https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry) (<https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry>)
- [Individual Counseling](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling) (<https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling>)

#### *Additional Student Support Services*

- Registrar (<https://registrar.unt.edu/registration>)
- [Financial Aid](https://financialaid.unt.edu/) (<https://financialaid.unt.edu/>)
- [Student Legal Services](https://studentaffairs.unt.edu/student-legal-services) (<https://studentaffairs.unt.edu/student-legal-services>)
- [Career Center](https://studentaffairs.unt.edu/career-center) (<https://studentaffairs.unt.edu/career-center>)
- [Multicultural Center](https://idea.unt.edu/multicultural-center) (<https://idea.unt.edu/multicultural-center>)
- [Counseling and Testing Services](https://studentaffairs.unt.edu/counseling-and-testing-services) (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- [Pride Alliance](https://idea.unt.edu/pridealliance) (<https://idea.unt.edu/pridealliance>)
- [UNT Food Pantry](https://studentaffairs.unt.edu/food-pantry) (<https://studentaffairs.unt.edu/food-pantry>)

*Academic Support Services*

- [Academic Resource Center](https://clear.unt.edu/canvas/student-resources) (<https://clear.unt.edu/canvas/student-resources>)
- [Academic Success Center](https://success.unt.edu/asc) (<https://success.unt.edu/asc>)
- [UNT Libraries](https://library.unt.edu/) (<https://library.unt.edu/>)
- [Writing Center](https://writingcenter.unt.edu/) (<https://writingcenter.unt.edu/>)
- [Math Lab](https://learningcenter.unt.edu/math-lab) (<https://learningcenter.unt.edu/math-lab>)