

Electricity and Magnetism

Lecture Section 002, TuTh 8:00 - 9:20 am, will be taught remotely via Zoom

Professor: Yuankun Lin
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Telephone: (940) 565-4548
E-mail: yuankun.lin@unt.edu The best way to reach me with questions or concerns is via email. In most cases, you can expect to receive a response to emails within 24 hours.
Office Hours: 9:30-11:00 am, and by appointment

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.

Text: Recommended text is *University Physics*, 15th Edition, by Young and Freedman. Other calculus-based introductory physics texts are acceptable; **the successful student will have a text**. Students are required to obtain access to online homework from <https://www.pearson.com/mastering>

Canvas will be used to post some useful course materials and your grades. To get to this resource, go to <https://unt.instructure.com/login/canvas> and follow the UNT link to log on. (You will log on using your UNT EUID and password.) Once logged on, select this course. You will find an electronic copy of this syllabus, copies of the PowerPoint presentations from lecture.

Course Technology & Skills

Minimum Technology Requirements

The minimum technology requirements for students is:

- Computer
- Reliable internet access
- Speakers and camera
- Microphone
- Plug-ins
- Microsoft Office Suite
- Canvas Technical Requirements
(<https://clear.unt.edu/supported-technologies/canvas/requirements>)

Technical Assistance

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. 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 (<http://www.unt.edu/helpdesk/index.htm>)

Email: 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

Topics: This course will cover electric fields, direct-current and alternating-current circuits, magnetic fields and magnetic induction, electric and magnetic properties of matter, electromagnetic waves, and geometrical and wave optics.

Attendance

- 1) You are expected to attend all lectures and recitations for the section in which you are enrolled;
- 2) Classes will start at the assigned time.
- 3) University of North Texas' Attendance Policy (<http://policy.unt.edu/policy/15-2->)

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Specific Expectations: 1. Be able to solve the example questions in slides independently without looking at the class notes. If you cannot solve them, look at the solution in your class notes and try again next day; 2. Be able to finish the home work independently; 3. Read through text-book to understand some key concepts.

Exams:

There will be **three 45-minute common exams** during the semester, to be given starting at 4:00 pm on Friday on 9/25, 10/23 and 11/20, and a comprehensive final exam at 8:00 a.m. - 10:00 a.m. on 12/8.

1) **There will be no makeup exams.**

2) Questions pertaining to the exam score must be directed to the instructor in writing within one week.

Homework:

1) All homework will be posted, collected, and graded via the internet.

2) You must access your assignment online through the <https://www.pearson.com/mastering> website, work the problems, and submit your solutions to the server by the due date indicated online.

3) Homework grading policy: Your homework grade is determined from your web-based homework score.

4) **Details of accessing the homework server are given on the last page of this syllabus.**

Grade: The grading in the course will be based on the total points earned from exams, homework, and lecture and recitation attendance/short quizzes. The point values for each category are given below:

Exams	1 st exam 15% ; 2 nd exam 15% ; 3 rd exam 15% ; 30% for the final;
Homework	15%
Lecture & Recitation	5% participation/ 5% recitation
Total	100%

Lab Credit: You must enroll separately in Physics 2240 for laboratory science credit.

Class Recordings & Student Likenesses: Synchronous (live) sessions in this course will be recorded for students enrolled in this class section to refer to throughout the semester. Class recordings are the intellectual property of the university or instructor and are reserved for use only by students in this class and only for educational purposes. Students may not post or otherwise share the recordings outside the class, or outside the Canvas Learning Management System, in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.

Tentative Lecture Schedule – *subject to amendment by the instructor*

Session	Date	Day	Chapter: Lecture Topic
1	Aug. 25	Tues	Orientation, Ch. 21: Electrical Charge, Coulomb's law
2	Aug. 27	Thur	Ch. 21: , Electric field, Electric field lines, electric flux
3	Sep. 01	Tues	Ch. 21- Ch. 22: Gauss's law, Applications of Gauss's law
4	Sep. 03	Thur	Ch. 22: Conductors in electrostatic equilibrium
5	Sep. 08	Tues	Ch. 22-Ch. 23: Electric potential energy, Electric potential
6	Sep. 10	Thur	Ch. 23: Electric field from potential
7	Sep. 15	Tues	Ch. 23: Electric potential for continuous charge distributions, Equipotential surface
8	Sep. 17	Thur	Ch.23-Ch. 24: Capacitance, capacitor networks, Capacitors with dielectrics, electric dipoles
9	Sep. 22	Tues	Ch. 24 Capacitance, capacitor networks, Capacitors with dielectrics, electric dipoles
10	Sep. 24	Thur	Ch. 24 and Review <u>Sep. 25, exam1, 4:00 pm</u>
11	Sep. 29	Tues	Ch. 25: Ohm's law, Resistors, electromotive force, Energy and power in electrical circuits
12	Oct. 01	Thur	Ch. 25. Ohm's law, Resistors, electromotive force, Energy and power in electrical circuits
13	Oct. 06	Tues	Ch. 25 and Ch.26: DC circuits
14	Oct. 08	Thur	Ch. 26: DC circuits, Resistor networks
15	Oct. 13	Tues	Ch. 26: Kirchhoff's rules, RC circuits, household wiring, electrical safety
16	Oct. 15	Thur	Ch. 27: Magnetic fields, magnetic force on charged particles/wires, Torque on current loops
17	Oct. 20	Tues	Ch. 27: Magnetic dipoles, Motion of charged particles in magnetic fields, Hall effect

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18	Oct. 22	Thur	Ch.27 and Review <u>Oct. 23, exam 2, 4:00 pm</u>
19	Oct. 27	Tues	Ch. 28: Biot-Savart law, Force between current-carrying conductors
20	Oct. 29	Thur	Ch. 28: Force between current-carrying conductors, Gauss's law for magnetism
21	Nov. 03	Tues	Ch. 28: Gauss's law for magnetism, Ampere's law
22	Nov. 05	Thur	Ch. 29: Faraday's law of induction, Lenz's law, Applications of Faraday's law
23	Nov. 10	Tues	Ch. 29: Faraday's law of induction, Lenz's law, Applications of Faraday's law
24	Nov. 12	Thur	Ch. 30: Inductance, RL circuits, energy in magnetic field
25	Nov. 17	Tues	Ch. 30: RL circuits, LC and RLC circuits
26	Nov. 19	Thur	Ch. 30 and Review <u>Nov 20, exam 3, 4:00 pm</u>
27	Nov. 24	Tues	Ch. 31: Phasor diagrams, resistance and reactance
28	Nov. 26	Thur	<u>Thanksgiving</u>
29	Dec. 01	Tues	Ch. 31: Power in AC and Transformers Electromagnetic radiation
30	Dec. 03	Thur	Review

FINAL EXAM: Dec. 8, 2018 (Tuesday): 8:00 am -10:00 a.m.

Core course objectives: In this course, students focus on describing, explaining, and predicting natural phenomena using the scientific method. Strong emphasis is placed on student understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

PHYS 2220 contributes the following core course learning objectives:

(1) Critical thinking

Students will gain the ability to use the knowledge of mathematics and the basic physical laws of nature to solve physics problems. This skill requires creative thinking and innovation to identify and apply appropriate models to analyze physical phenomena.

(2) Effective communication

Students will gain proficiency in communicating ideas effectively in graphical and written form through submission of written homework solutions, examinations, and lab reports; and in oral form through question-answer problem-solving recitation sessions, occasional in-class discussion of concepts and experiments, and in conducting laboratory experiments, where they work together in small groups.

(3) Quantitative skills

Students will interpret and analyze observable facts and data to understand physical systems, and will have extensive practice applying algebra, geometry, trigonometry, and differential and integral calculus in their analyses. In the laboratory exercises, students must measure, compile, organize and analyze numerical data and ultimately draw conclusions about their findings as part of the laboratory objectives.

(4) Teamwork

Students work in small teams to conduct laboratory experiments and interpret the results. Students will need to consider different points of view and work effectively with others to deliver a satisfactory report.

Course Evaluation

Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course. 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) 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.

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Course Policies

COVID-19 Impact on Attendance

While attendance is expected as outlined above, it is important for all of us to be mindful of the health and safety of everyone in our community, especially given concerns about COVID-19. Please contact me if you are unable to attend class because you are ill, or unable to attend class due to a related issue regarding COVID-19. It is important that you communicate with me prior to being absent so I may make a decision about accommodating your request to be excused from class.

If you are experiencing any symptoms of COVID-19 (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Hotline at 844-366-5892 or COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure. While attendance is an important part of succeeding in this class, your own health, and those of others in the community, is more important.

Class Materials for Remote Instruction

The UNT fall schedule requires this course to have fully remote instruction beginning August 24th. Additional remote instruction may be necessary if community health conditions change or you need to self-isolate or quarantine due to COVID-19. Students will need access to a webcam and microphone to participate in fully remote portions of the class. Information on how to be successful in a remote learning environment can be found at <https://online.unt.edu/learn>.

Statement on Face Covering

Face coverings are required in all UNT facilities. Students are expected to wear face coverings if they visit the campus. If you are unable to wear a face covering due to a disability, please contact the Office of Disability Access to request an accommodation. UNT face covering requirements are subject to change due to community health guidelines. Any changes will be communicated via the instructor.

Class Participation

To enhance learning, pursue the following strategies:

- (1) Read the text chapter within the forty-eight hours prior to the lecture.
- (2) During the online session, listen, observe, take notes, analyze, discuss with peers, answer questions, solve in-class problems and respond to questions asked by your instructor.
- (3) Work the assigned problems only after you have read and reviewed the material.
- (4) Come to the session prepared: bring a calculator, your text book, participate and take full advantage of the learning experience.
- (5) Work extra practice problems, such as from the end-of-chapter problems in the text.

Examination Policy

Exams will be moving online to Canvas through the Respondus LockDown browser for the entire semester. Please follow the link to download the Respondus LockDown browser to be able to take the exams and quizzes for the remainder of the semester.

<https://download.respondus.com/lockdown/download.php?id=165715487>

The University is committed to providing a reliable online course system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will extend the time windows and provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and contact the UNT Student Help Desk: helpdesk@unt.edu or 940.565.2324 and obtain a ticket number. The instructor and the UNT Student Help Desk will work with the student to resolve any issues at the earliest possible time.

UNT Policies

Academic Integrity Policy

Academic Integrity Standards and Consequences. 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/>).

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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.

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 session 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.

Sexual Assault Prevention

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit 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. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565- 2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.

Important Notice for F-1 Students taking Distance Education Courses

Federal Regulation

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the [Electronic Code of Federal Regulations website](http://www.ecfr.gov/) (<http://www.ecfr.gov/>). The specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

Class Recordings & Student Likenesses

Synchronous (live) sessions in this course will be recorded for students enrolled in this class section to refer to throughout the semester. Class recordings are the intellectual property of the university or instructor and are reserved for use only by students in this class and only for educational purposes. Students may not post or otherwise share the recordings outside the class, or outside the Canvas Learning Management System, in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.

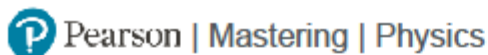
Academic Support & Student Services

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>)



Student Registration Instructions

To register for UNTPHYSFall2020LIN:

1. Go to <https://www.pearson.com/mastering>.
2. Under Register, select **Student**.
3. Confirm you have the information needed, then select **OK! Register now**.
4. Enter your instructor's course ID: **lin12339**, and **Continue**.
5. Enter your existing Pearson account **username** and **password** to **Sign In**.
You have an account if you have ever used a MyLab or Mastering product.
 - » If you don't have an account, select **Create** and complete the required fields.
6. Select an access option.
 - » Enter the access code that came with your textbook or that you purchased separately from the bookstore.
 - » If available for your course,
 - Buy access using a credit card or PayPal.
 - Get temporary access.

If you're taking another semester of a course, you skip this step.
7. From the You're Done! page, select **Go To My Courses**.
8. On the My Courses page, select the course name **UNTPHYSFall2020LIN** to start your work.

To sign in later:

1. Go to <https://www.pearson.com/mastering>.
2. Select **Sign In**.
3. Enter your Pearson account **username** and **password**, and **Sign In**.
4. Select the course name **UNTPHYSFall2020LIN** to start your work.

To upgrade temporary access to full access:

1. Go to <https://www.pearson.com/mastering>.
2. Select **Sign In**.
3. Enter your Pearson account **username** and **password**, and **Sign In**.
4. Select **Upgrade access** for **UNTPHYSFall2020LIN**.
5. Enter an access code or buy access with a credit card or PayPal.