

**PHYSICS 2220-003**  
**Electricity and Magnetism**  
**Spring 2019**

Lecture Section 003, PHYS 102, MWF 11:00 am - 11:50 am

Recitation Section 203, PHYS 115, M 12:00 pm - 1:20 pm

Recitation Section 208, PHYS 115, W 12:00 pm - 1:20 pm

Recitation Section 209, PHYS 115, F 12:00 pm - 1:20 pm

Recitation Section 214, PHYS 112, M 3:30 pm - 4:50 pm

Recitation Section 217, PHYS 115, W 3:30 pm - 4:50 pm

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**Professor:** Vincent Lopes  
**Office:** Physics Bldg., Room 209C  
**Telephone:** (940) 565-4726  
**E-mail:** Vincent.Lopes@unt.edu  
**Office Hours:** Monday 9 am to 10 am, Wednesday 2:30 pm to 3:30 pm, and by appointment

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**Course Materials:**

The recommended text is *University Physics*, 13<sup>th</sup> or 14<sup>th</sup> Edition, by Young and Freedman (Pearson). Other calculus-based introductory physics texts are acceptable; ***the successful student will have a text.*** You are required to obtain access to the Expert TA online homework system.

**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.

**Physics 2220 Core Objectives:**

This course satisfies the core course requirement by fostering skills associated with four core objectives:

- 1) **Critical thinking** - analysis, evaluation, and synthesis of information.
- 2) **Effective communication** - development, interpretation, and expression of ideas through written, oral, and graphical means.
- 3) **Quantitative skills** - the ability to compute and manipulate quantitative data and to reach meaningful conclusions.
- 4) **Teamwork** - the ability to consider different points of view and to work effectively as a team.

**Class Policies**

- 1) Students are to attend class and recitations regularly as scheduled.
- 2) Students are to be prepared for class (read/review assigned chapters prior to lecture).
- 3) This is a professional environment. Students are to be respectful of the instructor and other students. No vulgar language or rude behavior will be tolerated.
- 4) Pertinent questions should be directed to the instructor. Patience with other student's questions is expected behavior.
- 5) *Classes will start at the assigned time. Students who arrive late should enter quietly and sit down, Do not walk between the instructor and class across the front of the room as it is disruptive and disrespectful to the instructor and fellow students. Tardy students will not be given any additional time on test or Final Exam days.*
- 6) Students are expected to participate by answering in-class questions, and taking weekly written recitation quizzes/questions.
- 7) Silence mobile phones prior to attending class. Put mobile phones away.

### Tests and Final Exam:

- 1) Tests and the Final Exam questions will be based on lecture material, material contained in the text and in the homework assignments. Four tests will be given during the semester and a 2-hour comprehensive final exam (**Monday May 6<sup>th</sup> from 10:30 am to 12:30 pm**) will also be given. **THERE WILL BE NO MAKEUPS for TESTS and FINAL EXAM.**
- 2) The lowest test grade will be dropped and highest three tests grades will be used to calculate the course grade. The final exam will consist of equal portions from each of the regular exams plus any material covered after the last regular test. If one (1) regular test is missed, that test will count as the lowest test grade and will be dropped. A second missed test will be given a score of zero(0) unless a valid excuse is accepted by the instructor. The grade for the excused second missed test will be determined by the percentage correct of the problems on the final exam relating to that particular test.\* If more than two tests are missed, grades of zero will be given for the additional tests, regardless of the excuse.
- 3) Students are to provide their own pencil, eraser, ink pen and calculator. Phone calculators CANNOT be used.
- 4) Students CANNOT share pencils, erasers, pens or calculators during tests or the final exam.
- 5) Multiple answers to the same question will be marked wrong automatically.
- 6) Answers / work deemed to be illegible by the instructor will be marked wrong.
- 7) Questions pertaining to the grading of tests questions and problems must be directed to the instructor in writing within two weeks after the tests are returned to the class.

### Homework:

- 1) All homework will be posted, collected, and graded via the internet. You will also be required to turn in written solutions to selected homework problems, which will be collected weekly and graded.
- 2) You must access your assignment each week online through the Expert TA website, work the problems, and submit your solutions to the server by the due date indicated online.
- 3) Your neatly written solutions to the selected homework problems must put in the mailbox labeled “2220 – Lopes - 11 AM” near the south end of the 2<sup>nd</sup> floor hallway in the Physics Building by the same due date and time as for the online homework. It is recommended that you make a copy of your written solutions before submitting them. Details of accessing the homework server are given later in this syllabus. Address all problems with the homework server to your instructor.
- 4) Format for written homework problems:
  - a) Use only one side of page with no problems extending across pages.
  - b) Staple your written homework assignment at the upper left hand corner.
  - c) Name, Course/section # and HW # should appear on the first page.
  - d) **SHOW ALL WORK AND UNITS. IF WRITING IS NOT LEGIBLE YOU WILL NOT GET CREDIT. HOMEWORK TURNED IN AFTER THE ASSIGNED DEADLINE WILL RECEIVE NO CREDIT.**
- 5) Homework grading policy:
  - a) The Expert TA web-based homework score is up to 80% of the total score possible for an assignment.
  - b) The remaining 20% of your assignment score is based on the quality of your written solutions. To receive full credit for the written work, the solutions presented must be both i) correct and ii) sufficiently detailed to allow someone to understand all the steps of the solution.

### Grades:

The course grades will be calculated as follows:

Average of 3 best Tests grades.....	60%
Final Exam.....	20%
Home Work.....	10 %
Class Attendance.....	5%

Letter grades will be assigned on the basis of the following numerical scores:

90 —100 = A
80 – 89 = B
70 - 79 = C
60 - 69 = D

Grades will NOT be rounded or scaled.

89.99 = B
69.99 = D

### Lab Credit:

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

**Topic Schedule – the instructor reserves the right to amend the topic schedule.**

1	14-Jan	M	Introduction and Ch. 21, Electric charge and electric field
2	16-Jan	W	Ch. 21, continued
3	18-Jan	F	Ch. 21, continued
-	21-Jan	M	<i>No class Monday, Jan 22 – Martin Luther King Day</i>
4	23-Jan	W	Ch. 21, continued and Ch. 22, Gauss's Law
5	25-Jan	F	Ch. 22, continued
6	28-Jan	M	Ch. 22, continued
7	30-Jan	W	Ch. 23, Electric Potential
8	1-Feb	F	Ch. 23, continued
9	4-Feb	M	Ch. 23, continued
10	6-Feb	W	Ch. 24, Capacitance and dielectric
<b>11</b>	<b>8-Feb</b>	<b>F</b>	<b>Test # 1 Chap 21 - 23</b>
12	11-Feb	M	Ch. 24, continued
13	13-Feb	W	Ch. 24, continued
14	15-Feb	F	Ch. 25, Current, resistance, and emf
15	18-Feb	M	Ch. 25, continued
16	20-Feb	W	Ch. 25, continued
17	22-Feb	F	Ch. 26, DC circuits
18	25-Feb	M	Ch. 26, continued
19	27-Feb	W	Ch. 27, Magnetic field and magnetic forces
20	1-Mar	F	Ch. 27, continued
21	4-Mar	M	Ch. 27, continued
22	6-Mar	W	Ch. 28, Sources of magnetic field
<b>23</b>	<b>8-Mar</b>	<b>F</b>	<b>Test # 2 Chap 24 - 27</b>
	11-Mar		<i>No Class, Spring Break</i>
	13-Mar		<i>No Class, Spring Break</i>
	15-Mar		<i>No Class, Spring Break</i>
24	18-Mar	M	Ch. 28, continued
25	20-Mar	W	Ch. 28, continued
26	22-Mar	F	Ch. 29, Electromagnetic induction
27	25-Mar	M	Ch. 29, continued
28	27-Mar	W	Ch. 29, continued
29	29-Mar	F	Ch. 30, Inductance
30	1-Apr	M	Ch. 30, continued
31	3-Apr	W	Ch. 31, Alternating current
<b>32</b>	<b>5-Apr</b>	<b>F</b>	<b>Test # 3 Chap 28 - 30</b>
33	8-Apr	M	Ch. 31, continued
34	10-Apr	W	Ch. 31, continued
35	12-Apr	F	Ch. 32, Electromagnetic waves
36	15-Apr	M	Ch. 32, continued
37	17-Apr	W	Ch. 33, Nature and propagation of light
38	19-Apr	F	Ch. 33, continued
39	22-Apr	M	Ch. 34, Geometrical optics
40	24-Apr	W	Ch. 34, continued
41	25-Apr	F	Ch. 34, continued
<b>42</b>	<b>29-Apr</b>	<b>M</b>	<b>Test # 4 Chap 31 - 34</b>
43	1-May	W	Open
-	3-May	F	<i>No Class, Reading Day</i>
<b>Final</b>	<b>6-May</b>	<b>Monday</b>	<b>FINAL EXAM —Comprehensive— 10:30 am to 12:30 pm, PHYS 102</b>

### **Physics 2220 Goals and Learning Strategies:**

The goals of instruction in Physics 2220 are to lead and to guide you to master the fundamentals of elementary classical mechanics and thermodynamics, to construct for yourself a fundamental understanding of these topics, to develop your skills of analysis using the mathematical tools of algebra and calculus, and to cultivate an interest in and an appreciation for physics in nature and in the human experience. To help in achieving these goals you are requested to pursue the following strategies:

- 1) **Read the text chapter within the forty-eight hours prior to the class.** You should bring your questions to class or e-mail to the instructor prior to the morning of the class.
- 2) During class, **listen, observe, take notes, analyze, discuss with peers, answer questions, solve in-class problems.** (Again, **silence your mobile phone and put it away.**)
- 3) **Review your textbook chapter summary and your notes** within twenty-four hours after class.
- 4) **Work the assigned problems** only after you have read and reviewed the material of the chapter. If you get stuck on a problem (for instance, after 3 unsuccessful attempts, or 20 minutes of effort), move on to the next problem and bring your questions to recitation, the Physics Instructional Center help room, or your instructor.
- 5) **Communicate with your instructor** via e-mail at [Vincent.Lopes@unt.edu](mailto:Vincent.Lopes@unt.edu) or during office hours whenever you have an observation or question. **Be specific with your questions.**
- 6) **Come to class prepared!**
- 7) **Work extra practice problems**, such as from the text's end-of-chapter problems.

To learn more about campus resources and information on how you can achieve success, go to [succeed.unt.edu](http://succeed.unt.edu).

### **Homework Information**

In this course you will be using Expert TA, an online tutorial and homework program.

#### **To get started:**

- 1) Go to the registration link: <https://www.theexpertta.com/registration> or use link <http://goeta.link/USQ45TX-F3AAA4-20V>  
Enter the 3-part Student Class Code: **USQ45TX-F3AAA4-20V**
- 2) Enter your email address (to be your user name), a password, and requested personal information
- 3) Either use your access card from the bookstore, or pay using a credit card

You can now begin using Expert TA. You will be directed to the main class management screen and your class name will be in the left column under "Classes". Assignments will be in the middle column listed under "Assignments" and are shown by due date/time.

There is a "Getting Started with Expert TA" Tutorial available, so you can get familiar with the interface. Hints and Feedback should be used often when available, as these are key features of the system.

Student & Tech Support – email [main@theexpertta.com](mailto:main@theexpertta.com) any time. You can also call 24x7 toll-free 877-572-0734. Student FAQs available by visiting <http://theexpertta.com/support/support-faqs>

## Ancillary Information

### **Academic Accommodations**

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable 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 reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information see the Office of Disability Accommodation website at <http://www.unt.edu/oda>. You may also contact them by phone at [940.565.4323](tel:940.565.4323).

**Drop information** is available in the schedule of classes at:

<http://registrar.unt.edu/registration/schedule-of-classes>

**Last day for instructors to drop a student with either W or WF:** Spring 2019: April 1<sup>st</sup>, 2019 (Monday)

UNT's policy on **Academic Dishonesty** can be found at:

<http://www.vpaa.unt.edu/academic-integrity.htm>

**Canvas** will be used to post some useful course materials and your grades. To get to this resource, go to <http://learn.unt.edu> 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, test expectations and equation sheets.

**Tutors** are available in Physics Room 209 to assist you with questions related to solving homework problems.

Monday, Tuesday, Wednesday: 10 am to 6 pm

Thursday 10 am to 8 pm

Friday 10am to 4 Pm

## Course Evaluation

*The Student Perceptions of Teaching (SPOT) is a requirement for all organized classes at UNT. This short survey will be made available to you on-line at the end of the semester and will provide you with an opportunity to provide feedback to your course instructor. SPOT is considered to be an important part of your participation in this class. In addition to SPOT, there will be a brief in-class course survey during the last two weeks of the semester.*

For the Spring 2019 semester you 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. Please look for the email in your UNT email inbox. Simply click on the link and complete your survey.

After logging in to the [my.unt.edu](http://my.unt.edu) portal, students can access the SPOT survey site by clicking on the SPOT icon. A list of their currently enrolled courses will appear. Students complete each course evaluation independently. During the long terms, the SPOT is open for students to complete two weeks prior to final exams. During the Spring term, the SPOT is open for students to complete six days preceding their final exam. See [SPOT Calendar](#) for specific dates and deadlines.