

PHYSICS 3010
Modern Physics
Spring 2020

Lecture Section 001, PHYS 116, TR 8:00 am - 9:20 am
Recitation Section 201, PHYS 116 T 11:00 am – 11:50 am

Professor: Vincent Lopes, Ph.D.
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Office Hours: Wednesday Noon to 1 pm, Thursday 10:30 am to 11:30 am, and by appointment

Course Materials:

The text used for this course is *Modern Physics* 4th Edition by Kenneth Krane (ISBN 978-1-119-49555-0). You will need this text to be successful.

Topics:

This course will cover special relativity, the foundations of quantum mechanics and its application to atomic physics, properties of matter, and nuclear physics.

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) There will be four (4) eighty (80) minute tests during the semester and a comprehensive 2 hour final exam. The final exam is scheduled at **8:00 AM on Tuesday, May 5th.** Test and final exam questions will be based on lecture material, material contained in the text and in the homework assignments. You must show all of your work on your test and final exam papers for full credit.
- 2) There will be no makeup tests or make up for the final exam. Lowest test score will be dropped.
- 3) All students **MUST** take the Final Exam. The Final exam grade will **NOT** be dropped.
- 4) Students are to provide their own pencil, eraser, ink pen and calculator. Phone calculators **CANNOT** be used.
- 5) Students **CANNOT** share pencils, erasers, pens or calculators during tests or the final exam.
- 6) Multiple answers to the same question will be marked wrong automatically.
- 7) Answers / work deemed to be illegible by the instructor will be marked wrong.
- 8) **Any student caught cheating will be given a grade of zero for any test or final exam.**
- 9) Questions pertaining to the grading of exam questions and problems must be directed to the instructor in writing **within two weeks** after the tests are returned to the class.

Homework:

- 1) Homework will be assigned each week in lecture, and generally will be due Tuesday in class the week after it is assigned. Work must be legible and complete to receive full credit.
- 2) Students may help each other when working assignments (but not when working tests or the final exam). However, each person must submit separate work.

Grades:

The course grades will be calculated as follows:

Average of best three (3) Tests.....	55 %
Final Exam.....	25 %
Homework.....	15 %
Class/Recitation/Quiz.....	5 %

Letter grades will be assigned on the basis of the following numerical scores: 90 —100 = A

80 – 89 = B

Grades will NOT be rounded or scaled.

70 - 79 = C

89.99 = B

60 - 69 = D

69.99 = D

Lab Credit:

Laboratory: A separate laboratory course, PHYS 3030.501, is offered in conjunction with this course. The laboratory course meets Thursdays from 4:00 pm to 6:50 p.m. in Physics Room 208. The lab course will be given a separate grade and will not be calculated into this course grade.

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

1	14-Jan	T	Ch. 1, Review of classical physics
2	16-Jan	R	Ch. 1, continued
3	21-Jan	T	Ch. 2, Special relativity
4	23-Jan	R	Ch. 2, continued
5	28-Jan	T	Ch. 2, continued
6	30-Jan	R	Ch. 3, E+M Waves
7	4-Feb	T	Ch. 3, continued
8	6-Feb	R	Ch. 4, Matter waves
9	11-Feb	T	Test # 1: Ch 1 - 3
10	13-Feb	R	Ch. 4, continued
11	18-Feb	T	Ch. 5, Schrodinger Eq
12	20-Feb	R	Ch. 5, continued
13	25-Feb	T	Ch. 6, Rutherford, Bohr model of atom
14	27-Feb	R	Ch. 6, continued
15	3-Mar	T	Ch. 7, Hydrogen atom
16	5-Mar	R	Test # 2: 4 - 6
	10-Mar		<i>No Class, Spring Break</i>
	12-Mar		<i>No Class, Spring Break</i>
17	17-Mar	T	Ch. 7, continued
18	19-Mar	R	Ch. 8, Many electron atom
19	24-Mar	T	Ch. 8, continued
20	26-Mar	R	Ch. 10, Statistics physics
21	31-Mar	T	Ch. 10, continued
22	2-Apr	R	Test # 3: 7, 8, 10
23	7-Apr	T	Ch. 11, Solid state physics
24	9-Apr	R	Ch. 11, continued
25	14-Apr	T	Ch. 12, Nuclear properties
26	16-Apr	R	Ch. 12, continued
27	21-Apr	T	Ch. 13, Nuclear reactions
28	23-Apr	R	Ch. 13, continued
29	28-Apr	T	Test # 4: 11 - 13
30	30-Apr	R	Review
Final	5-May	T	FINAL EXAM —Comprehensive— 8 am to 10 am, PHYS 116

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/withdrawal policies are available in the schedule of classes at:

<https://registrar.unt.edu/registration/fall-registration-guide>

Last day for a student to drop a class with a W: Monday March 30th, 2020

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 <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, test expectations and equation sheets.

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

Mon 10 am to 6 pm

Tues 10 am to 6 pm

Wed 10 am to 8 pm

Thurs 10 am to 8 pm

Fri 10 am 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.

For the Spring 2020 semester you will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" (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 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.