

**Syllabus**  
**Physics 3010, Modern Physics**  
**Fall, 2023**

Regular Meeting Times: TuTh 11:00am-12:20pm, PHYS 115

Recitation Meeting Times: TuTh 12:30pm-1:20pm, CURY 210

Instructor: Dr. Carlos Ordonez (or-dawn-ez)

Office: PHYS 302; Phone: 940-565-4860; Email: cao@unt.edu

Instructor's Office Hours: TuTh 9:30AM - 10:50AM or by appointment

Course Packet: The course packet is required for each class. PHYS 3010 Course Packet by C. A. Ordonez is available at Eagle Images, University Services Building, Room 124.

Scientific Calculator: A calculator is required for each class. The calculator should have the  $\sqrt{x}$ ,  $\ln(x)$ , and  $y^x$  functions and scientific notation.

Textbook: *Modern Physics* (by K. Krane) is optional.

Attendance: Attendance is required.

Prerequisite(s): PHYS 1520 or PHYS 2220, and MATH 1720.

Course Requirements:

Three Exams: Each Counts 30%

Final Exam: Counts 30%

Assignments: Count 10%

Exams: The lowest of the four exam grades is dropped. If an exam is missed for any reason, it will be the one dropped. Make-up exams will **not** be given. Exams are multiple choice, open book/notes, and a non-communicating calculator is required. Answer sheets are provided. If you are more than 20 minutes late to an exam, you will not be allowed to take the exam. If you turn in your exam, you must leave the room. Items (e.g., calculators) may *not* be shared during an exam.

Assignments: Each assignment is due at the beginning of class one week following the designated start date, unless specified otherwise. Any assignments that have start dates during the first week of class may be turned in up to one week late without penalty. You may only turn in assignments for credit during class, and assignments may not be turned in after the class period that precedes pre-finals days. You may help each other when working assignments (but not when working exams). However, each person must submit separate work. After you finish an assignment, you will be responsible for having it graded (if a grader is available) or grading it yourself (if answers are provided). You may revise your work and regrade the assignment up to the due date. An assignment is penalized 30 points (out of 100) if turned in late by up to one week. Assignments are not accepted more than one week late. Staple each assignment separately and put your name on each. (The instructor has a stapler if you need one.)

Extra Practice Problems: It is recommended that each set of extra practice problems be worked in preparation for each exam. Answers to extra practice problems are found at the end of the course packet. Bring up questions regarding how to work assignment problems and extra practice problems during the Recitations and during Class (time permitting). Extra practice problems are not to be turned in.

Learning Objective: To develop analytical problem-solving skills and learn about modern physics. The class meetings are optimized to maximize the efficiency at which problem-solving skills are developed. A typical class meeting includes a class lecture with an interactive problem-solving component.

## Schedule

Aug. 22 - Sept. 14 Basic Special Relativity (8 lectures)

Topics: Time Dilation, Length Contraction, Relativistic Transformations, Relativistic Energy, Relativistic Momentum, Fission, Fusion, Antimatter, etc.

Sept. 19 **Exam I**

Sept. 21 - Oct. 12 Basic Quantum Physics (7 lectures)

Topics: Schrodinger Equation, Hydrogen Atom, Many-Electron Atoms, etc.

Oct. 17 **Exam II**

Oct. 19 - Nov. 30 Basic Statistical Physics (11 lectures)

Topics: Systems of Non-Interacting Particles, Conduction Electrons, Black-body Radiation, Superfluid Helium, Ideal Gas, etc.

November 20-26 Thanksgiving Break (no classes)

Dec. 5 **Exam III**

Dec. 7 Pre-Finals Day

Dec. 12 **Comprehensive Final Exam, 10:30AM - 12:30PM**

## **Additional Information**

**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. A finding of academic dishonesty associated with an exam would result in a grade of zero for the exam.

**ADA Accommodation Statement.** 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 at [disability.unt.edu](http://disability.unt.edu).

**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 the UNT Learning Management System (LMS) for contingency plans for covering course materials.