General Physics II / Phys 1420/Section 001

Instructor Information

Daniel Brown M.S. Email: Danielbrown3@my.unt.edu Office: Physics building Room 310

Class Location: Curry 204 Times: MTWR 11 am -12:50 pm

Recitation Location: Sage 230 Times: TR 1-1:50pm, 2-2:50pm,

Office Hours: WF 2-3 pm in PHYS 209 or available by appointment M-F 10 am – 4 pm

Hello there! I am excited to work with you this semester! I am a graduate student here at UNT working on my Ph.D.! My research focus is low energy fusion reactions, but I have contributed to research in solar physics as well. My goals this summer are to foster a positive learning environment, coach you in critical thinking skills, and make you more aware of the physics going on around you! (And of course teach you physics) I am well aware of how difficult physics can be and I hope that I can create a class that you can succeed in.

Teaching Assistant: Mikaila Lapinski - mikailalapinski@my.unt.edu

Office Hours: Posted on Canvas

Course Information

PHYS 1420 is a non-calculus physics sequence suitable for life sciences majors and preprofessional students. We will survey major subject areas in classical physics including principles and applications of electricity, magnetism, light, and modern (atomic, nuclear, and quantum) physics. At the completion of the course, you should be able to apply these concepts in everyday situations and your future career.

This course is a part of the Life and physical sciences core. Courses in this category focus on describing, explaining and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences by fostering skills associated with the four core objectives:

• Critical Thinking Skills, including creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.

• Communication Skills, including effective development, interpretation and expression of ideas through written, oral and visual communication.

• Empirical and Quantitative Skills, including the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

• Teamwork, including the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Course Structure

During this five-week course we will be studying electricity, magnetism, light, and modern physics!

The goal each week is to have you interact with the concept of the week in six different ways to maximize your understanding of each concept. These consist of guided readings, lectures, conceptual problems, demonstrations, homework problems, and exams.

There will be a guided reading due before each lecture. The purpose of the guided reading is to familiarize you with the concepts we'll be covering in class. I believe these readings are essential to studying physics. Guided reading will highlight key moments from your textbook, define vocabulary words, break down equations, and test your conceptual understanding.

We will begin our course with a study of light and its properties and how the medium it travels through affects these properties. From there we will discuss electricity and the flow of charge and devices that can capture and store electrical energy as well as devices that hinder its movement. Next, we will study magnetism and its interactions with electrical charge. Throughout these modules we will discuss energy and its conservation. Finally, we will discuss concepts of modern physics and their applications. Throughout this course we will discuss the applications of these concepts in other multidisciplinary fields. (optics, biology, radiology)

How to Succeed in this Course

Connect with me through email and/or by attending office hours. Given the accelerated nature of the course, I will attempt to respond to emails within the hour between the hours of 9 am -5 pm M-F. If you contact me and do not receive a response within 48 hours please send a follow-up email. You can also always schedule a meeting outside of office hours between the hours of 9 am -5 pm M-F.

In addition, the physics department also offers a plethora of resources to help you on your physics journey. We have a tutoring center in Hickory Hall in room 266. Their summer hours are 12 am - 5 pm M-R. The tutors there are very good at their jobs, and I highly recommend forming study groups that meet there.

Required Materials

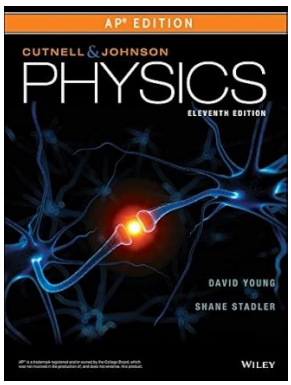
- University Physics Volume 2
- University Physics Volume 3

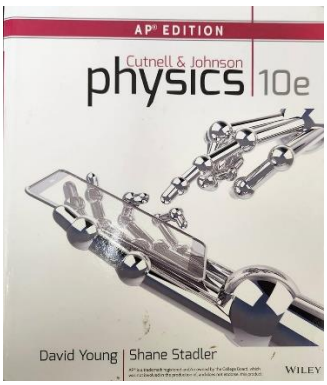
These are the open Stax textbooks they are free to download and use.

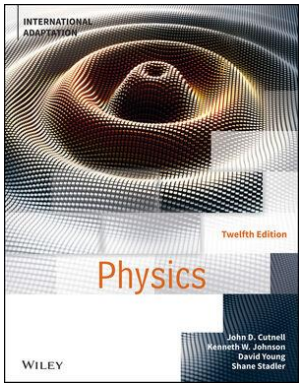
Recommended Materials

- Introduction to Physics by Cutnell and Johnson (Any edition should do)

Check the library for a copy or try to find an older edition online.







Note: You are not required to use the online textbook!

Technology requirements for this course

This course has digital components. To fully participate in this class, students will need internet access to reference content on the Canvas Learning Management System. If circumstances change, you will be informed of other technical needs to access course content. Information on how to be successful in a digital learning environment can be found at Learn Anywhere (https://online.unt.edu/learn).

- A computer
    - All assignments for this course are found online on canvas.
- A mobile device with iClicker.
    - Attendance will be taken on iClicker as you find your seat.

Grading Structure

Grades will be determined by the following percentages:

- Attendance 10%
- Recitation 20%
- Homework 20%
- Tests 50%

The final class letter grade depends on your course percentage:

- $A \geq 89.50\%$
- $79.50 < B < 89.50\%$
- $69.50 < C < 79.50\%$
- $59.50 < D < 69.50\%$
- $F < 59.50$

Grades on the border of a letter grade will not be bumped. There is already half a percentage point of grace built in.

Late work

Late work can be submitted until the last day of class (7/23) for 80% credit. Exams may not be rescheduled, but those scores may be made up during the final.

AI policy

In this course, Generative AI (GenAI) work will not be accepted and the use of GenAI in this class is prohibited. Doing physics problems teaches critical thinking skills. This part of the course is lost when students plug questions into GenAI. For this reason, the use of tools like Claude, ChatGPT, and Gemini is not permitted. While these tools can be helpful in some contexts, they do not align with our goal of fostering the development of your independent thinking. Using GenAI to complete any part of an assignment, exam, or coursework will be considered a violation of academic integrity, as it prevents the development of your own skills, and will be addressed according to the Student Academic Integrity policy (https://policy.unt.edu/policy/06-003).

I did not use GenAI to produce any of the content provided to you in this course.

Extra Credit

No extra credit assignments will given. A half point of grace will be given to round your grade up. An extra 2% is given to your test grades if you take all of the exams.

Attendance

Attendance will be taken daily through iCLicker. Students will be given 1 free miss and after proof will be required. Proof can be a doctor's note, obituary, or picture of flat tire, etc. Students caught gaming the attendance to sign in while you are not present will be deducted points equal to missing a class after their first warning.

Because of the nature of a summer class the speed of this class is accelerated. Attending every class is paramount to your success. Being late sometimes is inevitable. Please do not be embarrassed and know you are welcome to join, but please do so without distracting others.

Recitation

Recitation is a mandatory practice problem session. Students will break up into groups and tackle practice problems together. Upon completion students will upload their work to canvas for credit.

Homework

There are 3 assignments due each week. Assignments are broken down into categories:

1. Guided readings
2. Practice problems
3. Equation sheet

Before the first class each week students are to read the chapters of the book that are being covered that week. Guided reading will guide students through each chapter and highlight key parts, points, vocabulary, and equations.

Practice problems will be assigned for homework. The problem sets are due when the exam starts. These problems are divided into multiple parts to show students how to solve them.

All students will be asked to make their own equation sheets for the exams. These will be turned in with each exam. Students will be prompted to add equations to their sheets during the guided reading assignments. The purpose of not giving students an equation sheet is to ensure each student knows what each equation is and does.

All these assignments are paper based! The goal is to get you to write everything out!

Exams

There will be one exam per unit. Exams will be free response with a combination of conceptual and calculation problems. Each exam is 12% of your grade.

The final Exam will an optional cumulative exam. The four sections of the final are graded individually will be super scored with the corresponding section.

Schedule – may be amended at any time to reflect the speed of the course.

Week	Date		Topic
1	6/22		Syllabus, PIES, and properties of light
	6/23	Recitation 1	Reflection refraction and snells law
	6/24		mirrors and lenses optics and interference
	6/25	Recitation 2	Electric forces and fields
2	6/29		Exam 1
	6/30	Recitation 3	Electric potential and Electric potential energy
	7/1		Electric Flux
	7/2	Recitation 4	Conductors capacitors
3	7/6		resistors and circuits
	7/7	Recitation 5	Magnetic forces
	7/8		Exam 2
	7/9	Recitation 6	Magnetic fields
4	7/13		Magnetic energy and Flux
	7/14	Recitation 7	Induced current, transformers
	7/15		Atomic physics
	7/16	Recitation 8	Exam 3
5	7/20		Nuclear physics
	7/21	Recitation 9	Ionizing radiation
	7/22		nuclear power
	7/23	Recitation 10	Exam 4
	7/24		Final Exam

Assignment schedule can be found on Canvas.

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 Access (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 accommodation 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, refer to the Office of Disability Access website (https://studentaffairs.unt.edu/officedisability-access).

You may also contact ODA by phone at (940) 565-4323.