General Physics I with Calculus (PHYS 1510) – Spring 2026

Lecture: MWF 11:00-11:50 am in the Physics Building, Room 104
Recitation: MW 1:00-1:50 pm in Sage Hall, Room 230

Instructor Information

Dr. Rebekah Purvis
Email: rebekah.purvis@unt.edu
Office: Physics Building, Room 209E
Drop-In Hours (In Person Office Hours, Teams link available):

Monday	Tuesday	Wednesday	Thursday	Friday
9:30-10:30 am 2:00-2:30 pm	9:30-10:30 am 1:00-2:00 pm	- -	- 2:00-3:00 pm	- 12:00-1:00 pm

I am so excited to work with you this semester! My research background is in heliophysics, which is the study of the Sun and its effect on objects in the solar system. I am passionate about creating a positive learning environment for all students. I hope by the end of the semester you will have an appreciation for the power and beauty of physics and know how the skills you learn in this class will help you in your career.

Teaching Assistants: Jacob Emerick (jacobemerick@my.unt.edu) and Joshua Rezek (joshuarezek@my.unt.edu)
Office hours: Posted in Canvas

Course Information

This course is the first in a calculus-based physics sequence suitable for physics majors, bio-chemistry majors, math majors, chemistry majors, future science teachers, and pre-medicine and other health-related preprofessional students. We will study conservation laws and their applications, including mechanics, nuclear processes, and heat.

The goal of the course is to involve you in the contemporary physics enterprise, by emphasizing reasoning directly from a small number of fundamental principles, integrating contemporary insights such as atomic models of matter, engaging in the full process of creating and refining physical models, and reasoning iteratively about system behavior, both on paper and through the construction and exploration of computational models. No prior computational experience is required.

The major learning objectives for this course are:

1. Deduce from observations of an object's motion whether or not it has interacted with its surroundings and predict the motion of an object if interactions with the surroundings are known.
2. Mathematically and computationally describe position, motion, momentum and change of momentum in three dimensions, including rotational and curving motion.
3. Use the ball–spring model to explain how an inanimate object can exert a force on an object that touches it.
4. Analyze collisions by applying the Momentum Principle, Angular Momentum Principle, and Energy Principle to a system of more than one particle.
5. Analyze processes involving changes in potential energy, kinetic energy, and rest energy.

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

Laboratory

PHYS 1530 is the lab course associated with PHYS 1510 and is a co-requisite. There is a separate Canvas course and syllabus for lab. The labs are coordinated with lectures. You will do physical experiments and construct and apply computational models based on the theory you learn in lecture.

Course Structure

This class is classified as "In-Person" which requires in-person participation during the scheduled class periods and recitations. We will use a combination of active group work, lectures, demonstrations, discussions, interactive conceptual and quantitative questions, and at home preparation and practice to achieve these goals.

At the same time, 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.

How to Succeed in this Course

To be successful in this course, you will need to be proficient in the following:

- Using Canvas, including the WileyPLUS platform through Canvas
- Downloading and uploading files
- Sending and receiving emails

In my experience, you will set yourself up for success if you:

1. Come to class and pay attention. Class attendance is strongly correlated with final grade in this course.
2. Read the textbook to make sure you are prepared for lecture and recitation. There are amazing examples to help you process the approaches and math steps in problem solving.
3. Prioritize at home practice, as this is where you really learn physics. Use at home practice as a self-test: if you can't solve a problem, try to identify what you don't understand. Review your lecture notes and the assigned textbook sections but also get help right away when you need it (see Support section).
4. Use Distributed Practice – study for short periods each day instead of long sessions. It is very important to keep up and not fall behind.

I plan to provide all important course announcements in lecture, but there may be times that I need to communicate something to you before the next lecture. I will utilize Canvas Announcements for this, so be sure to have your notifications turned on.

To learn more about campus resources and information on how you can be successful at UNT, go to unt.edu/success and explore unt.edu/wellness. To get all your enrollment and student financial-related questions answered, go to scrappysays.unt.edu.

Support

I do not expect you to go through this course alone. Whenever you find yourself in need of some assistance, know there are options available to you.

- Meeting with me or the TA during drop-in office hours
    - I truly enjoy teaching physics, and I am more than happy to help you outside of class either individually or in groups.
    - Feel free to drop by during my drop-in hours or schedule an appointment via email. I will also respond to emails regularly between the hours of 9 AM – 4 PM Monday through Friday and will do my best to respond in a timely fashion on the weekend and in the evening.
- FREE tutors provided by the Physics Instructional Center
    - There are free tutors in Hickory Hall in the Physics and Chemistry Resource Center (Room 266) – check Canvas for hours.
- WileyPLUS resources
    - WileyPLUS offers MANY additional student resources. Some of these resources include study tips, LOTS of extra practice problems, and much more.

Expectations

As the instructor in this course, I am responsible for

- providing course materials that will assist and enhance your achievement of the stated course goals,
- providing timely and helpful feedback within the stated guidelines, and
- assisting in maintaining a positive learning environment for everyone.

As a student in this course, you are responsible for

- reading and completing all requirements of the course in a timely manner,
- working to remain attentive and engaged in the course and interact with your fellow students, and
- assisting in maintaining a positive learning environment for everyone.

Creating an Inclusive Learning Environment

I value the many perspectives students bring to our campus. Please work with me to create a classroom culture of open communication, mutual respect, and belonging. Not everyone will know every answer right away, and there will be many times where a misconception prevents someone from getting to the right answer. Let's all work together to learn all much as we can. All discussions should be respectful and civil. Although disagreements may happen and debates are encouraged, personal attacks are unacceptable. Together, we can ensure a safe and welcoming classroom for all. If you ever feel like this is not the case, please stop by my office and let me know. We are all learning together.

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 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, refer to the Office of Disability Access website (https://studentaffairs.unt.edu/office-disability-access). You may also contact ODA by phone at (940) 565-4323.

Course Materials

- Required: Matter & Interactions, Volume 1, 5th Edition (Chabay, Sherwood, Titus, and Spicklemire, Wiley, 2025), which is your main resource for this course. You will also need the WileyPLUS homework system (purchased and accessed through the Canvas course bundled with the e-Text). There is a 14-day free trial so you can get started right away.
    - Within the e-text, you can highlight, take notes, create flashcards, and use text to speech
- Recommended but not required: a scientific calculator for exams (scantrons will be provided by the instructor if needed)
- Purchase of the paper textbook is optional but recommended for physics majors to reference in later courses.
- We will use VPython to build computational models of physical systems throughout this course. Your first lab in PHYS 1530 during Week 1 is the activity "Welcome to VPython: A Tutorial". This interactive assignment gives an overview of the basic features of VPython. Read carefully and experiment with the small exercises. This is an important part of lecture and lab, so invest the time now to become familiar with it.
  IMPORTANT: When you make your Trinket account, please use your preferred name as you indicated on the "Get to Know You" survey.
- 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 and WileyPlus. 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). Access to a Computer or Laptop: Some assignments cannot be completed from mobile devices such as phones, tablets, or Chromebooks. Supplementary materials and/or readings may also require a computer

Assessing Your Knowledge

Your final grade will be calculated as follows:

At Home Preparation and Practice (lowest scores dropped)	20%
Recitation (lowest scores dropped)	20%
Lecture Quizzes (lowest scores dropped)	15%
Midterm Exam	20%
Final Exam	25%

Letter grades are assigned as follows:
A = 90.0 to 100 B = 80.0 to 89 C = 70.0 to 79 D = 60.0 to 69 F = below 60
Grades on the border of a letter grade will not be bumped. These scores can be improved through class engagement using iClicker, reflections, and other activities. See the Extra Credit module in Canvas for details.

At Home Preparation and Practice

Physics is not a spectator sport – you must engage with the content by reading about the concepts, studying solved examples, and working problems yourself. I respect the time and effort these tasks take and therefore 40% of your final grade is determined by the activities you complete outside of lecture (at home and recitation).

Before Lecture Preparation

Class time is used most efficiently when everyone has read the section(s) of the text that will be discussed and thought a bit about the content.

- Pre-Lecture assignments will be posted on the Canvas page through WileyPLUS and will be due by 11:59 pm. This will give me time to review your responses and adjust my lecture if needed.
- Your textbook is a vital source of information for the topics covered in class, and you are expected to complete the reading assignment and watch any assigned videos.
- Late work is not accepted, unless lecture is postponed (due to weather or other university closure, or instructor emergency)
- Although I do expect everyone to complete the reading before class, I do not expect you to understand everything perfectly!

After Lecture Practice

Follow up lectures by practicing problems, which is key to understanding physics. I encourage you to begin these assignments as soon as possible, as it is unlikely you will be able to complete them effectively in one sitting. I encourage you to follow the practice of Distributed Studying, which is where you work on a few problems each day.

- Practice sets are available online through WileyPLUS
- I encourage you to work in groups. Many problems will have random values within the problem, so you must submit your own work. You should write-up the final solutions individually, in your own words. Make sure you understand the reasoning behind the solution.
- Late work will be accepted up to 5 days after the due date, with penalty (see Canvas).

To compensate for various possible scenarios throughout the semester that may cause an assignment to not be turned in or to not go well, the six lowest scores from this category will be dropped.

Recitation

The purpose of recitation is to practice problems with your classmates and to ask questions.

- My expectation is that you are actively engaged with your group for the entire class period. You should not be on your phone or working on other assignments. Your score will be reduced if we notice that you are off task or not contributing.
- Be willing to make mistakes and volunteer ideas during discussions. Be kind to your classmates and yourself.
- You may be required to turn in a paper copy of your work, or upload a photo to Canvas, or submit an Assignment/Quiz/Discussion Board in Canvas.
- Attendance is required. You may not earn credit by completing the tasks at home.
- I understand that every student will occasionally miss a recitation, so I will drop the three lowest scores from this category.

Lecture Quizzes

Most weeks you will complete a short (10-15 minute) quiz as an individual. This activity will be a check-in for both me and you to see how you are able to solve a problem without the support of your classmates. The top 10 scores will be averaged and assigned to the Lecture Quiz category.

Exams

The final way for you to demonstrate your mastery of the course content is through examination.

- Two exams will be given: a midterm and a final. Exam dates are noted on the calendar at the end of this document. Please record these dates in your calendar immediately.
- Each exam is comprehensive. The final exam focuses on newly covered topics but will require skills from the first half of the semester.
- All exams will be in-person and are closed book. You may have access to additional online or digital resources. An equation sheet will be provided. You must provide your own calculator. You will be notified in Canvas if additional materials are permitted.
- Missed exams will be graded as a zero and no make-up exams will be given unless you have a university-approved absence. If you are absent due to documented illness, we will meet to discuss options (final decision is left to the instructor).
- Questions about exam grading must be directed to the instructor in writing within one week.
- If your individual final exam score is higher than your individual midterm score, then your final exam score will replace this score. Individual exam questions can also be used to replace lecture quiz scores at the discretion of the instructor.

Extra Credit

Reflections

After the Midterm Exam, you can complete an Exam Wrapper Reflection to earn up to 0.5% on your final course average. There will also be an End of Course Reflection activity worth up to 0.5% on your final course average. Other extra credit opportunities may be posted in the Extra Credit module in Canvas.

iClicker

I will use iClicker to help me understand what you know, give everyone a chance to participate, and increase how much you learn in class. This will also provide you with feedback on how well you are comprehending course concepts, help you master challenging concepts, and allow you to review material after class.

As additional motivation to attend and participate in lectures, iClicker sessions will be counted towards extra credit. Attendance/polls/quizzes/assignments will be worth up to 3% extra credit on your final grade. You will earn points for each question you answer, and for being present in class.

You can participate with the iClicker student app on a smartphone, tablet or laptop. It is your responsibility to follow the steps below to properly get added to my iClicker course in a timely fashion. (See end of this document and Canvas module for details.) It is also your responsibility to regularly check your iClicker records for any discrepancies and bring them to my attention within 48 hours.

Attendance and Participation

Being punctual indicates our respect for others. Please arrive before class begins to find a seat, prepare your materials, and connect with your peers. The beginning of class is especially critical—just like the beginning of a movie or book. That being said, being late to class is sometimes inevitable. If you are late, know that you are welcome to join the class, but please do so without distracting others. You are expected to be engaged in lecture, contribute when you can, and participate fully in recitation by staying on task and communicating with your classmates, TA, and instructor.

Statement on use of AI in this course (and PHYS 1530)

Students in my physics and astronomy courses have shared that they like to use GenAI as a partner in learning. Students shared that they have conversations by asking questions ("Was there ever water on the surface of Mars?") or get help with math by giving it a specific question ("How do you find the acceleration of an object with a mass of 2 kg that experiences a net force of 10 Newtons?"). While I am somewhat confident that GenAI will give you correct answers to these questions, I have seen examples where it gives super wrong answers or the correct answer with incorrect or confusing steps. So, while I encourage you to use this tool to help you study, maintain a critical eye, ask it to give you sources, and reach out if the information you get seems to contradict something we learned in class or does not make sense.

You may not use Generative AI in this course to find answers to questions in quizzes or exams. You may use a tool to check your original written work for grammar/clarity. It is my expectation that the content you submit in this course is your original work.

I will always disclose how I use GenAI, and I expect the same from you. In accordance with the UNT Honor Code, unauthorized use of GenAI tools is prohibited. Using GenAI content without proper credit or substituting your own work with GenAI undermines the learning process and violates academic integrity. If you're unsure whether something is allowed, please seek clarification.

Please refer to the Academic Integrity Policy (PDF) (https://policy.unt.edu/policy/06-049).

Technical Support

The UIT Helpdesk will provide support with any issues you might have with Canvas and they may be able to help you troubleshoot other computer issues. 940-565-2324 or helpdesk@unt.edu. Canvas does not work well with some browsers. Chrome browser does support Canvas and WileyPlus.

WileyPLUS Support

For help with WileyPlus for Canvas, go to:
https://players.brightcove.net/4931690914001/default_default/index.html?videoId=6310647151112

You may also use the following links for questions about your WileyPlus.
https://wpsupport.wiley.com/s/article/Student-Registration-for-New-WileyPLUS-in-Canvas

Email: wileysupport@wiley.com or live chat https://support.wiley.com/s/contactsupport

More iClicker Information

I have set up an iClicker integration with Canvas, which will pull your name directly into my iClicker roster.

1. If you have an existing iClicker student account that uses our official university email address and/or Student ID, you will automatically be added to our iClicker course.

- If the iClicker system does not find a matching iClicker student account, you will receive an email from iClicker Support with instructions to update your existing account's profile or create a new account.
- Please note that this email may appear in your Spam or Junk folders.

2. If you receive an email prompting you to create or update your iClicker student account, make sure you include the correct account information.

- If you already have an iClicker account, do not create a new account. Instead, log in and edit your existing account's profile to avoid confusion and potential loss of points due to multiple accounts.

3. You should be dropped directly into this course.

- If you don't see this course in your account, use the + sign to search for my course
- Select "Add This Course" and it will be added to the main Courses screen of your iClicker account.

4. Set up the device(s) you'll use to participate in our class sessions.

- You can download the iClicker student mobile app via the App Store or Google Play, or you can use the iClicker web app by signing in as a student at iclicker.com.
- Connect to our classroom's Wi-Fi

5. Now the fun part! Participate in my iClicker class activities.

- When it's time for class, make sure you have selected my course from the main screen of iClicker.
- Select the Join button that appears on your screen, then answer each question I ask in iClicker.
- For short answer, numeric, and target questions, make sure you select Send.

6. Keep track of your attendance, review your work, and study after class in iClicker.

- You can review your grades, performance, and participation in iClicker.
- You can bookmark the questions I asked during class to turn them into flashcards or practice tests in the Study Tools section of iClicker

Academic Integrity Information

iClicker activities fall under the provisions of our campus academic honesty policy. Students must not engage in academic dishonesty while participating in iClicker activities. This includes but is not limited to:

- Checking in while not physically in class
- Having another student check you into class
- Answering polling questions while not physically in class
- Using more than one iClicker remote or account at a time
- Any student found to be in violation of these rules will lose their iClicker points for the entire term and may be reported to the Dean of Student Discipline.

Need help with iClicker?

If you are having trouble with your iClicker access code, check out this guide to access code errors.
If you are having issues connecting to the iClicker student app, check out these iClicker connectivity tips.
If you are having issues seeing your iClicker points, check out this troubleshooting guide.
Find answers to other questions and contact the iClicker Tech Support Team by visiting http://iclicker.com/support at any time.

WEEK	CLASS	READING	TOPIC
1	1st	---	Welcome to General Physics I, Vectors
JAN 12	2nd	1.1-1.5	Vectors, Interactions and Computational Modeling
2	1st	1.6-1.9	Speed, Velocity, Position Update, Momentum
JAN 19	2nd	1.10-1.13	Momentum at high speeds, Computational Modeling
3	1st	2.1-2.4	Force, Impulse, The Momentum Principle
JAN 26	2nd	2.5-2.11	Varying Net Force; Constant Net Force; Acceleration
4	1st	3.1-3.5	Gravitational Force, Reciprocity and Computational Modeling
FEB 2	2nd	3.6-3.7	Electric Force, The Standard Model
5	1st	3.8-3.10	Conservation of Momentum
FEB 9	2nd	4.1-4.6	Ball-spring model of a solid, Young's modulus, Friction
6	1st	4.7-4.10, 4.12	Buoyant Force, Vibrations, speed of sound in a solid, Derivative form of momentum principle
FEB 16	2nd	5.1-5.4	Unknown forces with constant momentum, changing momentum
7	1st	5.5-5.9	Curving motion, uniform circular motion
FEB 23	2nd	5.10	Complex problems
8	1st	---	Midterm review
MAR 2	2nd	---	MIDTERM EXAM*
9	1st	6.1	Energy for a single particle
MAR 16	2nd	6.2	Work
10	1st	6.3-6.4	Energy principle, change of rest energy
MAR 23	2nd	6.5-6.9	Potential energy, graphing energy
11	1st	6.10-6.15	Mass-Energy Equivalence, Multiparticle systems
MAR 30	2nd	7.1-7.3, 7.5, 7.7	Energy in a mass-spring system, Internal energy, energy dissipation, Heat
12	1st	9.1-9.4	Describing rotational motion and rotational energy
APR 6	2nd	10.1-10.4	Torque and angular momentum
13	1st	10.4-10.5	Angular momentum principle
APR 13	2nd	10.6-10.11	Equilibrium, computational models, extensions
14	1st	11.1-11.4	From angular momentum to collisions
APR 20	2nd	11.5-11.1	Scattering applications, inelastic collisions
15 **APR 27**	1st and 2nd	---	Review

*MIDTERM exam has three parts: Wednesday lecture in Sage Hall Testing Center; Wednesday recitation in Sage Hall 230; Friday lecture in Sage Hall Testing Center

Reading Day – Friday, May 1

Final Exam – Monday, May 4, 10 am – 12 pm