

PHYS 1302: General Physics II Lecture

Fall 2025

Course Information:

Course: PHYS 1302
Name: General Physics II Lecture
Section: 001
Lab Meeting: Tu Th 3:30 – 4:45 PM
Location: ST 269

Instructor Information:

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Office: ST 379
Office hours: Tu Th 5:00 – 6:00 PM

Course Description:

This course continues the two-part sequence in algebra-based introductory physics and builds directly on the ideas introduced in Physics I. The emphasis shifts toward rotation, oscillations, and wave behavior, with topics such as rotational dynamics, energy in rotating systems, simple harmonic motion, mechanical waves, and the physics of sound. The latter part of the course introduces electricity, beginning with charge interactions and electric fields, then moving into electric potential, capacitance, current, resistance, and basic circuits.

A central goal of the course is to show how these concepts connect to real life. Rotations explain everything from the balance of a gymnast to the operation of turbines. Waves and sound link directly to hearing, speech, and medical imaging. Electricity underlies nerve signaling in the body as well as the design of modern technology, from smartphones to hospital equipment.

Physics II is particularly valuable for students in life sciences, health-related programs, and other fields where an understanding of the physical world supports future study and careers. It blends conceptual insight with practical problem-solving, relying on algebra and trigonometry rather than calculus. Laboratory sessions play a key role, giving students direct experience with experiments and reinforcing principles from class.

By the end of the semester, students will have developed stronger quantitative reasoning skills, a deeper grasp of the connections between physics and biology/medicine, and the ability to apply physics to both everyday situations and advanced coursework in science, engineering, or healthcare.

Prerequisite: MATH 1314, MATH 1234, MATH 2313, or MATH 2314. Good standing in algebra and trigonometry is expected from the students.

Course Objectives and Learning Outcomes:

By the end of this course, students will be able to:

1. Understand and apply the principles of rotational motion including torque, angular momentum, and energy in rotating systems.
2. Describe and analyze oscillatory motion with emphasis on simple harmonic motion and resonance.
3. Explain the properties of waves and sound, including wave propagation, interference, standing waves, and the physics of hearing.
4. Develop a foundational understanding of electrostatics, focusing on electric charge, Coulomb's law, electric fields, and electric potential.
5. Apply concepts of electric circuits, including current, resistance, capacitance, and direct-current (DC) circuit analysis.
6. Connect physical principles to real-world and biological systems, such as medical imaging, nerve signaling, and technological applications.
7. Strengthen problem-solving skills using algebra and trigonometry to analyze and predict physical behavior.
8. Engage in experimental inquiry by designing, conducting, and interpreting laboratory experiments to reinforce theoretical concepts.
9. Communicate scientific reasoning effectively through written explanations, problem solutions, and collaborative discussions.
10. Build quantitative reasoning and critical thinking skills that prepare students for further study in science, engineering, and health professions.

Course Material:

The recommended textbook for this course is Cutnell & Johnson Physics, by Young and Stadler. The book is accessible through the WileyPLUS platform on Blackboard. Students are encouraged to pursue other introductory physics textbooks to aid the understanding of physical principles taught in the lectures. Some resources include:

1. Fundamentals of Physics, by Halliday, Resnick, and Walker: Known for clear explanations, numerous worked examples, and rich problem sets.
2. Physics by James Walker: A student-friendly option praised in forums for its clarity and real-world connections.
3. OpenStax College Physics: A free, high-quality algebra-based physics textbook available online. Widely adopted and includes thorough examples and exercises—very accessible for self-learners.
4. HyperPhysics: An extensive, concept-map-based online physics reference covering a wide range of topics with clear explanations.

5. PhET Interactive Simulations: High-quality, free physics simulations. Ideal for visualizing circuits, fields, waves, and optical phenomena.

Student Commitment:

Physics, like mathematics, requires active engagement rather than passive observation. This course is not centered on the rote memorization of formulas. Instead, it is designed to equip you with fundamental concepts, principles, and laws. Your responsibility is to develop a thorough understanding of these ideas and then apply them to problem-solving, laboratory experiments, project work, and active participation in recitation sessions.

Attendance, Exam, and Homework Policy:

1. Regular and punctual attendance is expected. If you are unable to attend a lab either for personal reasons or due to an emergency, please let your instructor know by email as soon as possible.
2. Exams will be conducted at the testing center. Students are allowed one handwritten letter paper-sized cheat sheet, and a non-programming calculator. Students are required to register their slot at the testing center as soon as the registration opens.
3. Make-up exams for Exam 1 and Exam 2 may be allowed under exigent circumstances, with valid documentation. The final examination must be taken as scheduled; make-up exams will not be offered.
4. Homework will be assigned on WileyPLUS platform accessible through Blackboard. Homework is an adaptive-style completion-based test. Your score doesn't depend on how many question you get right, rather depends on how far you progress in the assigned concepts. Homework will be assigned on every Thursday, and is due end of day next Thursday. There is a penalty of 25% of the score for every day the homework is submitted late.

Technology Requirements:

Please contact the I.T. department (helpdesk@tamusa.edu or call (210) 784 4357) at TAMU-SA with any technology related questions. You will need a working computer/laptop, with Windows or Mac, or a Chromebook. You will need software to read/write/edit Excel and to read PDF documents. You will also need a proper internet connection. A basic-level scientific calculator may be helpful for the lectures and for the exams.

Course Schedule:

This is a tentative schedule. Some adjustments should be expected. The pace of lectures may be adapted in accordance with student comprehension and performance.

Week	Dates	Schedule
1	Aug 26	Introductions, Syllabus, Course guidelines, etc.
	Aug 28	Review Chapter 4, 5
2	Sep 2	Review Chapter 5, 6
	Sep 4	Chapter 8
3	Sep 9	Chapter 9: 9.1 – 9.3
	Sep 11	Chapter 9: 9.4 – 9.5
4	Sep 16	Chapter 9: 9.6, Review
	Sep 18	Chapter 10: 10.1 – 10.2
5	Sep 23	Chapter 10: 10.3 – 10.4
	Sep 25	Recitation Session
6	Sep 30	Exam Day – No Lecture
	Oct 2	Chapter 10: 10.5 – 10.6
7	Oct 7	Chapter 10: 10.7 – 10.8
	Oct 9	Chapter 16: 16.1 – 16.3
8	Oct 14	Chapter 16: 16.4 – 16.6
	Oct 16	Chapter 16: 16.7 – 16.10
9	Oct 21	Chapter 17: 17.1 – 17.3
	Oct 23	Chapter 17: 17.4 – 17.6
10	Oct 28	Chapter 18: 18.1 – 18.5
	Oct 30	Recitation Session
11	Nov 4	Exam Day – No Lecture
	Nov 6	Chapter 18: 18.6 – 18.8

12	Nov 11	Chapter 18: 18.9
	Nov 13	Chapter 19: 19.1 – 19.3
13	Nov 18	Chapter 19: 19.4 – 19.5
	Nov 20	Chapter 19: 19.6, Chapter 20: 20.1 – 20.2
14	Nov 25	Chapter 20: 20.3 – 20.5
	Nov 27	Thanksgiving Holiday – No Lecture
15	Dec 2	Chapter 20: 20.6 – 20.8
	Dec 4	Chapter 20: 20.8, 20.12 – 20.13

Grading:

Your current and final grade is based on the averages calculated in the table below. The lowest of Exam 1 and Exam 2 will be dropped.

Homework	50%	
Exam 1	25%	Lowest of the two exams will be dropped in the final grade.
Exam 2	25%	
Final Exam	25%	
Total	100%	

Letter Grade:

A = 90 – 100%	B = 80 – 89%	C = 70 – 79%	D = 60 – 69%	F = 0 – 59%
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Extra Credit:

There are two ways to earn extra credit in this course.

1. Extra credit tests: There will be 5 tests conducted randomly over the course of the semester to gauge student progress in learning the material and understanding of the physical principles. Each test is worth a maximum of 3% extra credit.
2. Extra credit project/presentation: Students can take the initiative, either in a group (of maximum 3 students) or individually, to work on a term paper or an in-class presentation in any of the topics that shall be covered in the lectures. This is worth a maximum of 10% extra credit. Students must present the idea to the instructor and get prior approval for the intended project/presentation. The deadline for which is Monday, November 10.

Important Dates:

The complete academic calendar can be found at: The complete academic calendar can be found at: <https://www.tamusa.edu/academics/academic-calendar/index.html>

August 25	First day of classes
September 1	Labor Day – No Classes
September 10	Census Day
November 14	Last day to drop with an automatic “W”
November 25	Last day to withdraw from the University
November 26	Study Day – No Classes
November 27 – 29	Thanksgiving Holiday – No Classes
December 4	Last day of classes
December 5	Study Day – No Classes
December 6 – 12	Final Exams
December 16	University Commencement

Academic Integrity: We take this very seriously!

According to the Student Code of Conduct, the following are considered violations of Academic misconduct (but are not limited to): Cheating, Plagiarism, Multiple Submissions, Collusion, Lying, and Bribery.

Plagiarism, or copying the words of others with the intent of making it look like your own. Whether you use someone else's phrase word for word, or whether you try and change a few words, or even if you just borrow someone else's original idea and don't give them credit, that's unethical. Use your own words whenever possible, give credit to wherever, and put direct quotes inside quotation marks. Cheating Involves trying to trick me or others into thinking you did work that you did not do.

Searching the Internet for homework solutions and copying what you find is considered cheating. Searching the internet for help on a topic is fine, if you don't copy the answer. For example, suppose a question asks, "What are Newton's Laws of Motion?". Typing that phrase into any internet search engine and pasting the text in the answer box is considered cheating. Typing "What are Newton's Laws of Motion" into any internet search engine, reading a few web pages, and summarizing the information in your own words is not cheating. Borrowing a previous student's homework, exams, or solution sets is considered cheating.

Collusion is defined as working with another person to cheat. This can include copying someone else's answers to an exam or assignment, doing work for another student, buying or otherwise obtaining homework/exam solutions from any source online or offline, or any other instance of multiple people engaging in some form of Cheating or Dishonesty. Working with other students on an assignment is fine as long as everyone contributes, and each student does their work.

If you have any questions on whether a specific action is considered dishonest, please ask me before engaging in the activity. There is no need to be embarrassed about asking, and there is no penalty for asking.

Important Policies and Resources:

Academic Accommodations for Individuals with Disabilities: Texas A&M University-San Antonio is committed to providing all students with reasonable access to learning opportunities and accommodations in accordance with The Americans with Disabilities Act, as amended, and Section 504 of the Rehabilitation Act. If you experience barriers to your education due to a disability or think you may have a disability, Disability Support Services is located in the Central Academic Building, Suite 210. You can also contact them via phone at (210) 784 1335, or visit <https://www.tamusa.edu/Disability-Support-Services/index.html> or email at dss@tamusa.edu. Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Support Services and their instructors as soon as possible.

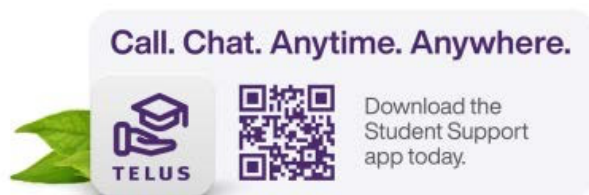
Academic Learning Center: The Academic Learning Center provides free course-based tutoring to all currently enrolled students at Texas A&M University-San Antonio. Students wishing to work with a tutor can make appointments through the Brainfuse online tutoring platform.

Brainfuse can be accessed in the Tools section of Blackboard. You can contact the Academic Learning Center by emailing tutoring@tamusa.edu, or by calling (210) 784 1307, or by visiting the Central Academic Building, room 202.

Counseling/Mental Health Resources: As a college student, there may be times when personal stressors interfere with your academic performance and negatively impact your daily functioning. If you are experiencing emotional difficulties or mental health concerns, support is available to you through the Student Counseling Center (SCC). To schedule an appointment, call (210) 784 1331 or visit Madla 120.

All mental health services provided by the SCC are free and confidential (as the law allows). The SCC provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services. For more information on SCC services visit <https://www.tamusa.edu/student-resources/support/student-counseling-center/index.html>.

Crisis support is available 24/7 by calling the SCC at (210) 784 1331 (for after-hours select option '2'). Additionally, the TELUS Student Support App provides a variety of mental health resources to include support for in the moment distress, an anonymous peer to peer support network, mental health screenings, podcasts, and articles to improve your mental wellbeing.



Emergency Preparedness: JagE Alert is Texas A&M University-San Antonio's mass notification system. In the event of an emergency, such as inclement weather, students, staff and faculty, who are registered, will have the option to receive a text message, email with instructions and updates. To register or update your information visit: <https://tamusa.bbcportal.com/>. More information about Emergency Operations Plan and the Emergency Action Plan can be found here: <https://www.tamusa.edu/about-us/emergency-management/>.

Download the SafeZone App (<https://safezoneapp.com>) for emergencies or call (210) 784 1911. For non-emergency, call (210) 784 1900.

Financial Aid and Verification of Attendance: According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended the first week of

class. Any student receiving federal financial aid who does not attend the first week of class will have their aid terminated and returned to the DoE. Please note that any student who stops attending at any time during the semester may also need to return a portion of their federal aid.

Writing, Language, and Digital Composing Center: The Writing, Language, and Digital Composing Center supports graduate and undergraduate students in all three colleges as well as faculty and staff. Tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Our language tutors support students enrolled in Spanish courses and students composing in Spanish for any assignment. Our digital studio tutors support students working on digital projects such as eportfolios, class presentations, or other digital multimedia projects. Students can schedule appointments through JagWire under the Student Services tab. Click on “Writing, Language, and Digital Composing Center” to make your appointment. The Center offers face-to-face, synchronous online, and asynchronous digital appointments. More information about what services they offer, how to make an appointment, and how to access your appointment can be found on their website at <https://www.tamusa.edu/academics>.

Meeting Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to submit a CARE referral (<https://www.tamusa.edu/university-policies/Student-Rights-and-Responsibilities/file-areport.html>) for support. Furthermore, please notify the instructor if you are comfortable in doing so. This will enable them to direct you to available resources.

Military Affairs: Veterans and active-duty military personnel are welcomed and encouraged to visit the Office of Military Affairs for any question involving federal or state VA Education Benefits. Visit the Patriots’ Casa building, room 202, or to contact the Office of Military Affairs with any questions at military.va@tamusa.edu or (210) 784 1397.

Religious Observances: Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or course work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes.

The Six-Drop Rule: Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student’s GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as “F” grades and will impact the student’s GPA.

Statement of Harassment and Discrimination: Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equal opportunity, and human dignity. To fulfill its multiple missions as an institution of higher learning, Texas A&M-San Antonio encourages a climate that values and nurtures collegiality and the uniqueness of the individual within our state, nation, and world. All decisions and actions involving students and employees should be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance with applicable federal and state laws, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, gender identity, gender expression, or pregnancy/parenting status. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the appropriate offices within their respective units.

Texas A&M University-San Antonio faculty are committed to providing a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex-based or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking, know that help and support are available. A&M-San Antonio's Title IX Coordinator can support those impacted by such conduct in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the Title IX Coordinator. Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such as counselors and trained victim advocates) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about a situation of sexual harassment, sexual violence, or other related misconduct, the faculty member must share that information with the university's Title IX Coordinator (titleix@tamusa.edu, (210) 784 2061, CAB 439K). If you wish to speak to a confidential employee who does not have this reporting requirement, you can contact the Student Counseling Center at (210) 784 1331 or visit them in Madla 120.

Pregnant/Parenting Students: Texas A&M-San Antonio does not require a pregnant or parenting student, solely because of that status or issues related to that status, to (1) take a leave of absence or withdraw from their degree or certificate program; (2) limit the student's studies; (3) participate in an alternative program; (4) change the student's major, degree, or certificate program; or (5) refrain from joining or cease participating in any course, activity, or program at the University. The university will provide such reasonable accommodations to pregnant students as would be provided to a student with a temporary medical condition that are related to the health and safety of the student and the student's unborn child. These could include maintaining a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals and their unborn child; excused absences because of illness or medical appointments; modified due dates for assignments; rescheduled tests/exams; taking a leave of

absence; and being provided access to instructional materials and video recordings of lectures for excused absences, if these would be provided to any other student with an excused absence. Pregnant/parenting students are encouraged to contact the Title IX Coordinator with any questions or concerns related to their status (titleix@tamusa.edu; 210-7842061; CAB 439K). Texas A&M-San Antonio has also designated the Title IX Coordinator as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18 years of age. The Title IX Coordinator can provide students with information regarding support services and other resources.

Students' Rights and Responsibilities: The following statement of students' rights and responsibilities is intended to reflect the philosophical base upon which University Student Rules are built. This philosophy acknowledges the existence of both rights and responsibilities, which is inherent to an individual not only as a student at Texas A&M University-San Antonio but also as a resident of this country.

Students' Rights:

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no University rule or administrative rule that in any way abridges the rights of freedom of speech, expression, petition and peaceful assembly as set forth in the U.S. Constitution.
2. Each student shall have the right to participate in all areas and activities of the University, free from any form of discrimination, including harassment, on the basis of race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, gender identity, gender expression, and pregnancy/parenting or veteran status in accordance with applicable federal and state laws.
3. A student has the right to personal privacy except as otherwise prohibited by law, and this will be observed by students and University authorities alike.
4. Each student subject to disciplinary action arising from violations of university student rules shall be assured a fundamentally fair process.

Students' Responsibilities:

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty, and administration.
2. A student has the responsibility to be fully acquainted with the published University Student Rules found in the Student Handbook, Student Code of Conduct, on our website, and University Catalog, and to comply with them, as well as with federal, state, and local laws.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire University community.
4. A student has the responsibility to recognize the University's obligation to provide a safe environment for learning.

5. A student has the responsibility to check their university email for any updates or official university notifications.

We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation, or disability. Conduct that infringes on the rights of another individual will not be tolerated. Students are expected to exhibit a high level of honesty and integrity in their pursuit of higher education. Students engaging in an act that violates the standards of academic integrity will find themselves facing academic and/or disciplinary sanctions. Academic misconduct is any act, or attempt, which gives an unfair advantage to the student. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered as academic misconduct. For more information on academic misconduct policies and procedures please review the Student Code of Conduct (<https://www.tamusa.edu/university-policies/student-rights-andresponsibilities/documents/Student-Handbook-2022-23.pdf>) or visit the resources available on the OSRR website (<https://www.tamusa.edu/university-policies/student-rights-and-responsibilities/academic-integrity.html>).

Use of Generative AI: Use of artificial intelligence (AI) tools, including ChatGPT, is permitted in this course for students who wish to use them. To adhere to our scholarly values, students must cite any AI-generated material that informed their work (this includes in-text citations and/or use of quotations, and in your reference list). Using an AI tool to generate content without proper attribution qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.