



PHYS 2426 882 FE – Advanced Physics II

Course Syllabus: Summer 2 2026

“Northeast Texas Community College exists to provide personal, dynamic learning experiences empowering students to succeed.”

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Weekday	Office Hours
Monday	Online
Tuesday	Online
Wednesday	Online
Thursday	Online
Friday	Online

This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities.

Information relative to the delivery of the content contained in this syllabus is subject to change. Should that happen, the student will be notified.

Course Description:

Four credit hours. This is a calculus-based physics course intended for students majoring in computer science, engineering, mathematics, physics, or related fields of study. Topics include charge, electric fields, magnetic fields, electric potential, current, capacitance, resistance, electromotive force, simple DC and AC circuits, induction, electromagnetic waves, propagation of light and geometric optics.

Prerequisite(s): PHYS 2425 (Completed) MATH 2414 (Completed)

Student Learning Outcomes:

Upon successful completion of this course, students will:

- 2426.1 Articulate the fundamental concepts of electricity and electromagnetism, including electrostatic potential energy, electrostatic potential, potential difference, magnetic field, induction, and Maxwell's Laws.
- 2426.2 State the general nature of electrical forces and electrical charges, and their relationship to electrical current.
- 2426.3 Solve problems involving the inter-relationship of electrical charges, electrical forces, and electrical fields.
- 2426.4 Apply Kirchoff's Laws to analysis of circuits with potential sources, capacitance, and resistance, including parallel and series capacitance and resistance.
- 2426.5 Calculate the force on a charged particle between the plates of a parallel-plate capacitor.

2426.6 Apply Ohm's Law to the solution of problems.

2426.7 Describe the effects of static charge on nearby materials in terms of Coulomb's Law.

2426.8 Use Faraday's and Lenz's Laws to find the electromotive force.

2426.9 Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level.

2426.10 Articulate the principles of reflection, refraction, diffraction, interference, and superposition of waves.

2426.11 Solve real-world problems involving optics, lenses, and mirrors.

2426L.1 Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner and evaluate the accuracy of physical measurements and potential sources of error in measurements.

2426L.2 Conduct basic laboratory experiments involving electricity and magnetism.

2426L.3 Relate physical observations and measurements involving electricity and magnetism to theoretical principles.

Evaluation/Grading Policy:

The breakdown of the course requirements is as follows:

%	Requirement
60%	Exams
15%	Assignments
15%	Quizzes
10%	Labs

Semester grades will be earned as follows

Percentage	Letter Grade
90% and above	A
80 %–89%	B
70 %–79%	C

60%–69 %	D
59.9% and below	F

Assignments consists of questions / problems from the chapters administered through Webassign. These problems can be reworked up to five times with decreasing credit for each attempt. The last grade earned for each assignment will be posted in the Blackboard gradebook. There are no extensions on due dates in order to maintain the course schedule.

Quizzes consists of short summary questions / problems over the chapter assignments. These are multiple choice and free response type questions. The quizzes are located and completed in the Blackboard content page in the “Quizzes” folder. These are timed assignments and must be completed in one session.

Laboratory work is completed through the Lab Procedures found in the Blackboard content page. Obtain the lab kit from the NTCC college store according to their instructions. Because students receive their lab kits at different times, I have set the due dates for the lab assignments beginning in the middle of the semester. However, I encourage you to perform the labs concurrently with the course materials to reinforce your understanding of the concepts as much as possible.

There are two exams administered through Webassign at scheduled windows during the semester. The exam sessions are required to be recorded with a web cam while producing a screen share using TEAMS. The instructions are shown in the TEAMS folder on the content page of Blackboard. (Failure to produce an acceptable video / screen share with materials in full view will result in a 70 point maximum exam score.) The exams allow two attempts for each individual question for diminishing credit. There is a three hour time limit for each exam, and the exams must be completed in a single session (the timer does not stop once you begin the exam). There are no makeup exams available if you miss a due date.

Webassign grades are automatically imported into Blackboard throughout the semester. If you see a grade in Blackboard that does not match an assignment grade in Webassign, it probably was in progress at the time of refreshing. Check back to see if it updates. The Blackboard gradebook is the official course grade since it is home to the quizzes and labs

Required Instructional Materials:

Publisher: Cengage Learning

ISBN Number: 9798214193212

Optional Instructional Materials:

You will need a scientific calculator for this class.

Minimum Technology Requirements:

Required Computer Literacy Skills:

You will need to be able to navigate Blackboard and Webassign to access your online course work.

Course Structure and Overview:

Chapter 22: Electric Fields

Chapter 23: Continuous Charge Distributions and Gauss’s Law

Chapter 24: Electric Potential
Chapter 25: Capacitance and Dielectrics
Chapter 26: Current and Resistance
Chapter 27: Direct-Current Circuits
Chapter 28: Magnetic Fields
Chapter 29: Sources of Magnetic Field
Chapter 30: Faraday's Law

Exam 1

Chapter 33: The Nature and Propagation of Light
Chapter 34: Geometric Optics
Chapter 35: Interference
Chapter 36: Diffraction

Exam 2

Communications:

The college's official means of communication is via your campus email address. I will use your campus email address and Blackboard to communicate with you outside of class. Make sure you keep your campus email cleaned out and below the limit so you can receive important messages.

Institutional/Course Policy:

Alternate Operations During Campus Closure and/or Alternate Course Delivery Requirements:

In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Northeast Texas Community College to move to altered operations. During this time, Northeast Texas Community College may opt to continue delivery of instruction through methods that include, but are not limited to, online through the Blackboard Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor NTCC's website (<http://www.ntcc.edu/>) for instructions about continuing courses remotely, Blackboard for each class for course-specific communication, and NTCC email for important general information.

Additionally, there may be instances where a course may not be able to be continued in the same delivery format as it originates (face-to-face, fully online, live remote, or hybrid). Should this be the case, every effort will be made to continue instruction in an alternative delivery format. Students will be informed of any changes of this nature through email messaging and/or the Blackboard course site.

Statement Regarding the Use of Artificial Intelligence (AI) Technology:

Employees and students shall be permitted to explore artificial intelligence (AI) and implement its use in and out of the classroom in accordance with policy and administrative regulations. The use of AI shall only be as a support tool to enhance student outcomes or as necessary to engage in research and shall never take the place of faculty, staff, and student decision-making. Any use of AI must comply with law, policy, and administrative regulations relating to student and employee privacy and data security. A student shall only use AI tools with faculty permission and shall be expected to produce original work and properly credit sources, including AI tools used in creating the work.

Example:

APA (7th edition)

OpenAI. (2026). ChatGPT (March 25 version) [Large language model]. <https://chat.openai.com/>

MLA (9th edition)

OpenAI. ChatGPT. 25 Mar. 2026, <https://chat.openai.com/>.

Employees or students who use AI tools to deceptively harm, bully, or harass others shall be disciplined in accordance with policy. [See DH, DIA series, FFD series, FFE, FLB, and the FM series] AI Use by Employees and Students. Northeast Texas Community College 225500 TECHNOLOGY RESOURCES CRB ARTIFICIAL INTELLIGENCE (LOCAL) DATE ISSUED: 12/8/2025 1 of 1 UPDATE 50 CRB(LOCAL)-AJC Adopted: 12/16/2025

NTCC Academic Honesty/Ethics Statement:

NTCC upholds the highest standards of academic integrity. The college expects all students to engage in their academic pursuits in an honest manner that is beyond reproach using their intellect and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. This course will follow the NTCC Academic Honesty and Academic Ethics policies stated in the Student Handbook. Refer to the student handbook for more information on these subjects.

ADA Statement:

It is the policy of NTCC to provide reasonable accommodation for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodation as required to afford equal educational opportunity. It is the student's responsibility to request accommodation. An appointment can be made with the Academic Advisor/Coordinator of Special Populations located in Student Services and can be reached at 903-434-8264. For more information and to obtain a copy of the Request for Accommodations, please refer to the special populations page on the NTCC website.

Family Educational Rights and Privacy Act (FERPA):

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

Tentative Course Schedule:

(*note* instructor reserves the right to make adjustments to this timeline at any point in the term):

Chap.	Title	Week	Key Due Dates*
22	Electric Fields	1	
23	Continuous Charge Distributions and Gauss's Law	1	
24	Electric Potential	1	
25	Capacitance and Dielectrics	2	
26	Current and Resistance	2	
27	Direct-Current Circuits	2	
28	Magnetic Fields	3	
29	Sources of Magnetic Field	3	
30	Faraday's Law	3	
	Exam #1		7/31/26
33	The Nature and Propagation of Light	4	
34	Geometric Optics	4	
35	Interference	4 – 5	
36	Diffraction	4 - 5	
	Exam #3		8/12/26

**This calendar will be adjusted to the needs of the course. Changes will be based on the course progress. The exam dates could be moved one or two days up or down. The Final Exam date is fixed and will not change.*