

**Course Title:** University Physics II

**Course Prefix:** PHYS

**Course No.:** 2523

**Section No.:** P02

**Department of | Physics**

**College of | Arts and Sciences**

**Instructor Name:**

**Dr Gary M. Erickson**

**Office Location:**

E.E. O'Banion (New) Science Building, Room 330G

**Office Phone:**

936-261-3135

**Fax:**

936-261-3149

**Email Address:**

[gmerickson@pvamu.edu](mailto:gmerickson@pvamu.edu)

**U.S. Postal Service Address:**

Prairie View A&M University

P.O. Box | 519

Mail Stop | 2230

Prairie View, TX 77446

**Office Hours:** | MTWR 1:00 – 2:00 PM

**Virtual Office Hours:** | Via email

**Course Location:** | New Science Building, Rm. 307

**Class Meeting Days & Times:** | MWF 11:00 – 11:50 AM

**Catalog Description:** | Credit 3 semester hours. A continuation of PHYS 2513, a calculus-based introductory physics course for science and engineering students. Course includes electricity, magnetism, and selected topics from heat, sound and light.

**Prerequisites:** | PHYS 2513 and MATH 2024

**Co-requisites:** | None

**Required Text:** | **University Physics with Modern Physics** by Bauer and Westfall

ISBN: 978-0-077-35483-1 (Pearson/Addison-Wesley)

**Recommended Text/Readings:**

**Physics for Scientists and Engineers, 6<sup>th</sup> Edition**, by Serway and Jewett, ISBN: 0-534-40842-7 and **Physics for Scientists and Engineers, 4<sup>th</sup> Edition** by Giancoli, ISBN 0-13-227358-6 (Pearson/Prentice Hall)

<http://www.khanacademy.org/>

<http://ocw.mit.edu/courses/physics/8-02-electricity-and-magnetism-spring-2002/>

**Access to Learning Resources:**

Tutors, computers, and reading material are available in NSCI-324  
PVAMU Library:

phone: (936) 261-1500;

web: <http://www.tamu.edu/pvamu/library/>

University Bookstore:

phone: (936) 261-1990;

web: <https://www.bkstr.com/Home/10001-10734-1?demoKey=d>

**Course Goals:**

The goals of this course are to familiarize the student with the physical principles that govern electricity, magnetism, magnetic induction, DC and AC circuits, and light, and enable the student to apply these principles to solve basic, representative problems. These include the properties of conductors, Coulomb's law, Gauss's law, electric potential, capacitance, resistance, Kirchoff's circuit rules, Lorentz force, Biot-Savart law, Ampere's law, Faraday's law, Lenz's law, inductance, impedance, resonant AC circuits, Maxwell's equations, and the wave properties of light.

## Course Outcomes/Objectives

		Core Curriculum Objective
1	Students will understand the relationship among electric force and field, electric potential, kinetic and potential energy in conductors, insulators, and dielectrics. Students will understand the origin of electromagnetic radiation, or light, from the simultaneous application of Ampere's and Faraday's laws.	Critical Thinking
2	Students will demonstrate the origin of magnetic field from electrical currents and be able to apply the Biot-Savart law and Ampere's law, appropriately, to determine the magnetic field. Students will demonstrate knowledge of Faraday's law of induction and Lenz's law and its application to motors, generators, transformers, AC circuits, as well as the generation of eddy currents.	Critical Thinking and Communication
3	Students will understand capacitance and resistance in DC circuits and their roles in the storage and dissipation of electrical energy. Students will demonstrate understanding of Gauss's law, its usage and limitations. Students will be able to describe the forces on and motion of charged particles in the presence of electric and magnetic fields.	Empirical and Quantitative
4	Students will participate group homework problems and group projects	Teamwork
5	Students will understand the basic wave properties of light: reflection, refraction, interference, and diffraction.	Critical Thinking
6	Students will discuss and explain numerical problems in the class.	Communication

## Core Curriculum Objectives:

1. **Critical Thinking.** Physics is required of science, engineering, and other technical majors because it describes the physical laws underlying how the world works and trains the student in critical thinking and problem solving. This is affected through both class examples discussions and homework problems.
2. **Empirical and Quantitative Skills.** Physics requires the student to learn the scientific method, correct use of physical units, and measuring techniques, both in the lectures and the laboratory.
3. **Teamwork.** Students are encouraged to work together on homework assignments and are required to form teams for a group presentation on a relevant topic.
4. **Communication.** Students are required to effectively communicate their knowledge of the subject through homework problems, exams, and their group presentations.

## Course Requirements & Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

- **Lectures:** Attendance of lectures is required, and students are expected to arrive on time, stay for the entire class period, and actively participate. (See the University attendance policy below.) The lecture does not replace reading the materials. The lecture is intended to expand, explain, and offer a different perspective on the material in the textbook. Questions from the instructor are designed to engage the student, ascertain the student's comprehension of the material presented, and train the student in critical thinking.
- **Homework:** Homework problems will be assigned on a timely basis. It is the responsibility of the student, individually or within a group, to complete each homework assignment by the due date. The instructor is available during office hours to assist students, and tutors are provided by the Physics Department. It is essential that the student understands the solution to problems if he/she is to succeed in this course; failure to understand homework problems will likely result in a disastrous outcome on exams.
- **Group Project:** Students will work in groups to create a presentation or YouTube-style video based on an approved topic relevant to the course subject.
- **Exams and Quizzes:** Four unit exams and a final exam are scheduled. Only calculators and no other electronic equipment are permitted during the exams and quizzes. Phones are to be tuned off.
- **Late Homework or Missed Tests:** Late homework or homework journal will not be accepted unless the student demonstrates exceptional circumstances. A unit exam may be excused or made-up at the instructor's discretion and only in the case that the student has a valid excuse. Inform the instructor in advance of an exam if there is a valid schedule conflict to schedule an acceptable time. In the event that an emergency occurs that causes an exam to be missed, it is expected that the student provide written evidence and schedule a make-up exam for as soon as possible following the emergency. There may be no opportunity to take the final exam after the scheduled time.

### Grading Matrix

Instrument	Value (points or percentages)	Total
Homework	Each problem counts equally	20%
Group Project	2 groups per unit	10%
Unit Exams	4 unit exams on current topics	50%
Final Exam	Comprehensive	20%
<b>Total:</b>		<b>100%</b>

#### Grade Determination:

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

## CLASS SCHEDULE

<u>Week</u>	<u>Topic</u>	<u>Assignments</u>
1	Ch. 21: Electrostatics	HW #1: Introductory Concepts HW #2: Electric Force and Field
2	Ch. 22: Electric Fields and Gauss's Law	HW #2: Electric Force and Field HW #3: Gauss's Law
3	Ch. 23: Electric Potential	HW #4: Electric Potential
4	Ch. 24: Capacitors	Exam #1 (on Ch. 21-23), Group Presentations HW #5: Capacitance
5	Ch. 25: Current and Resistance	HW #6: Current and Resistance
6	Ch. 26: Direct Current Circuits	HW #7: DC Circuits
7	Ch. 27: Magnetism	Exam #2 (on Ch. 25-26), Group Presentations HW #8: Magnetic Force
8	Ch. 28: Magnetic Fields of Moving Charges	HW #9: Magnetic Field
9	Ch. 29: Electromagnetic Induction	HW #10: Magnetic Induction
10	Ch. 29: (continued)	HW #11: Generators
11	Ch. 30: Electromagnetic Oscillations and Currents	HW #12: Inductance Exam #3 (on Ch. 27-30), Group Presentations
12	Ch. 31: Electromagnetic Waves	HW #13: Electromagnetic Waves
13	Topics from Ch. 32 and 34: Reflection, Refraction, Interference, and Diffraction of Light	HW #14: Wave Properties of Light, Group Presentations
14	Topics from Modern Physics (Time Permitting)	HW #15: Modern Topics, Group Presentations Exam #4 (on Ch. 31-32, 34, Modern Topics)
15 – 16	MT – Review Days W–T – Final Exam Period	Final Exam: Comprehensive

# University Rules and Procedures

## **Disability statement (See Student Handbook):**

Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

## **Academic misconduct (See Student Handbook):**

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

## **Forms of academic dishonesty:**

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

## **Nonacademic misconduct (See Student Handbook)**

The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

## **Sexual misconduct (See Student Handbook):**

Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

## **Attendance Policy:**

Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

## **Student Academic Appeals Process**

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

# Technical Considerations for Online and Web-Assist Courses

## Minimum Hardware and Software Requirements:

- Pentium with Windows XP or PowerMac with OS 9
- 56K modem or network access
- Internet provider with SLIP or PPP
- 8X or greater CD-ROM
- 64MB RAM
- Hard drive with 40MB available space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Netscape Communicator ver. 4.61 or Microsoft Internet Explorer ver. 5.0 /plug-ins
- Participants should have a basic proficiency of the following computer skills:
  - Sending and receiving email
  - A working knowledge of the Internet
  - Proficiency in Microsoft Word
  - Proficiency in the Acrobat PDF Reader
  - Basic knowledge of Windows or Mac O.S.

**Netiquette (online etiquette):** students are expected to participate in all discussions and virtual classroom chats when directed to do so. Students are to be respectful and courteous to others in the discussions. Foul or abusive language will not be tolerated. When referring to information from books, websites or articles, please use APA standards to reference sources.

**Technical Support:** Students should call the Prairie View A&M University Helpdesk at 936-261-2525 for technical issues with accessing your online course. The helpdesk is available 24 hours a day/7 days a week. For other technical questions regarding your online course, call the Office of Distance Learning at 936-261-3290 or 936-261-3282

## Communication Expectations and Standards:

All emails or discussion postings will receive a response from the instructor within 48 hours.

You can send email anytime that is convenient to you, but I check my email messages continuously during the day throughout the work-week (Monday through Friday). I will respond to email messages during the work-week by the close of business (5:00 pm) on the day following ***my receipt*** of them. Emails that I receive on Friday will be responded to by the close of business on the following Monday.

## Submission of Assignments:

Assignments, Papers, Exercises, and Projects will distributed and submitted through your online course. Directions for accessing your online course will be provided. Additional assistance can be obtained from the Office of Distance Learning.

## Discussion Requirement:

Because this is an online course, there will be no required face to face meetings on campus. However, we will participate in conversations about the readings, lectures, materials, and other aspects of the course in a true seminar fashion. We will accomplish this by use of the discussion board.

Students are required to log-on to the course website often to participate in discussion. It is strongly advised that you check the discussion area daily to keep abreast of discussions. When a topic is posted, everyone is required to participate. The exact use of discussion will be determined by the instructor.

**It is strongly suggested** that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.