

**THE UNIVERSITY OF TEXAS AT EL PASO
COLLEGE OF SCIENCE
DEPARTMENT OF PHYSICS**

Course #:	PHYS 2321 CRN 35767
Course Title:	Introductory Electromagnetism
Credit Hrs:	3.0
Term:	Summer 2018
Course Meetings & Location:	MTWRF 9:20 – 11:30 AM, Physical Science Building 115
Instructor:	Dr. José Leo Bañuelos
Office Location:	PSCI 215C
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E-mail address:	jlbanelos@utep.edu
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Emergency Contact:	(915) 747 5715
Office Hrs:	Wed 3:00pm – 5:00pm and by appointment
Textbook(s), Materials:	Physics for Scientists and Engineers, Knight, 4 th edition. It can be bought bundled with Mastering Physics (the online homework).

Course Objectives (Learning Outcomes):

PHYS 2321 will introduce you to the following topics: Electric charges, fields and potentials, flux and Gauss's Law, electric potential and potential energy, capacitive energy storage, Ohm's Law, elementary circuits, current and magnetism, and time varying fields. The goal is to provide students with a rigorous description of physical phenomena and to improve students' problem-solving abilities. You are going to learn physics conceptually and mathematically. You will learn to carefully describe how objects become charged and explain why electric and magnetic fields interact. You will learn to develop responses using carefully defined terminology, quantitative variables, tabulated measurements, and graphs of measurements.

Grading Policy:

Grades in this course will be based on your scores on three exams plus a final exam (comprehensive; but with emphasis on the last part of the course), laboratory, homework assignments, attendance and in-class participation, and quizzes.

Midterm exams:	30% (10% each)
Final exam:	20% (comprehensive)
Workshop:	15%
Lecture attendance	5%
Homework:	20%
Quizzes in Workshop	10%

Course Activities/Assignments:

1. Homework

It is essential you develop good problem solving methods: this includes developing writing skills to set up a problem, including diagrams and mathematical manipulation to achieve the

final answer. A numerical score will be assigned for each homework set. **Please do not fall behind because future material generally depends on previous material. Seek help immediately.** Please form study groups with your classmates and seek help from any TA during his/her office hours as you attempt to solve problems. The workshops are an extension of this course and you must make full use of them to solidify your understanding of the concepts covered during the lecture. Make sure that you understand the solutions and write them up yourself!

REGISTER FOR ONLINE HOMEWORK BY FOLLOWING INSTRUCTIONS:

Pearson_Student_Registration_Handout_banuelos42919_SU2018.pdf in the “**Instructions, Guides, Resources**” link on your Blackboard Home Page

There are several online homework access options:

1. **Provide the access code given to you when you purchased the textbook.**
2. **Purchase the electronic text (e-text) plus 3e Tech update.**
3. **Purchase the 3e Tech update only.**

EACH STUDENT WILL NEED HIS/HER OWN ONLINE ACCESS PACKAGE FOR THE HOMEWORK AS THE BARE MINIMUM PURCHASE FOR THIS COURSE.

Homework will be announced in advance in the lecture (approximately every week). Each will consist of problems based on the course material as well as an extra credit Adaptive Follow-Up exercise for those scoring less than 85%.

2. In-class Participation

You are required to install the iClicker Reef Student App which is a device polling system that will be used during each lecture to answer questions in class and record your in-class participation. Follow the *iClicker REEF* link under “**Instructions, Guides, Resources**” on your Blackboard Home Page for this course. You will be taken to the REEF Education site and prompted to create a new account if you do not already have one. You should automatically be taken to my iClicker course: **PHYS 2321 CRN 35767 Summer 2018**. You will also have the option to install the iClicker Reef Student App onto your mobile device.

Your participation in **iClicker REEF** polling sessions each lecture will be used to monitor your attendance in this course (**worth 5% of your grade**). Make sure your mobile device (laptop, cell phone, etc) is charged BEFORE coming to class.

You are expected to work on all assignments during your Workshop sessions and to take short quizzes on a regular basis. The quizzes will be based on the material covered during the workshop and in my lecture.

3. Exams

Exams will consist of problems very similar to the worked example problems in the text and the assigned homework problems. Exams will be closed-book unless I state otherwise. You should bring with you a pocket calculator to work out the answers to numerical problems: **make sure the battery is charged**. Cell phone use is NOT ALLOWED during the exams!

Mid-course exams will generally take place on Wednesdays.

The final exam is scheduled to take place Monday, August 6th 10:00 am – 12:45 pm according to the UTEP Summer 2018 Final Examination Schedule:

(Find link inside the UTEP Registrar's home page: <https://www.utep.edu/student-affairs/registrar/>)

The best way to prepare for the exams is to study the example problems, work out the assigned homework problems regularly, work through all problems in the workshop, and complete any revision guides given to you.

You should work as many additional problems from the text as you can: this is the best way to ensure your understanding of the material.

Make-up Policy:

An extension of the due date for the homework as well as the make-up of missing exams will be granted only in extraordinary circumstances. Late homework will be penalized at a rate of 8% of the maximum score for each day it is late.

Attendance Policy: No credit will be granted for just attending the class. You are expected to arrive to class on time, and participate in all problem-solving exercises.

Academic Integrity Policy:

A fundamental principle for any educational institution, academic integrity is highly valued and seriously regarded at The University of Texas at El Paso. More specifically, students are expected to maintain absolute integrity and a high standard of individual honor in scholastic work undertaken at the University.

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Please see: <http://sa.utep.edu/osccr/academic-integrity/> for more information and the UTEP Handbook of Operating Procedures: <http://admin.utep.edu/Default.aspx?tabid=73922>

Civility Statement:

Cell phones and pagers should be turned off during class time.

When absences occur, it is your responsibility to obtain handouts and notes from your peers.

When possible you will complete the activities you have missed.

Academic integrity is to be practiced at all times.

Disability Statement:

If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East Building, Room 106. For additional information, please visit the CASS website at <http://sa.utep.edu/cass/> . The student is responsible for presenting to the instructor any accommodation letters and instructions.

Military Statement:

If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact the instructor at the beginning of the semester.

Course Schedule:**Lectures 1-6 (7/10-7/17)**

1. Chapter 22
 - a. Electric charge
 - b. Point charges
 - c. Coulomb's law
 - d. Superposition
 - e. Continuous charge distribution
 - f. Electric field
 - g. Polarization
2. Chapter 23
 - a. Electric field
 - b. Superposition
 - c. Continuous charge distribution
 - d. Parallel plate capacitor
3. Chapter 24
 - a. Electric flux
 - b. Gauss's law

Exam 1 Wed July 18th**Lectures 7-11 (7/18-7/24)**

4. Chapter 25
 - a. Electric potential energy
 - b. Electric potential
 - c. Point charges
5. Chapter 26
 - a. Potential and field
 - b. Electrostatic equilibrium
 - c. Capacitance and capacitors
 - d. Energy stored in capacitors

Exam 2 Wed July 25th**Lectures 12-16 (7/25-7/31)**

6. Chapter 27
 - a. Electron current
 - b. Conductivity and resistance
 - c. Ohm's law
7. Chapter 28
 - a. Circuit elements
 - b. Kirchhoff's laws
 - c. Energy and power
 - d. Series and parallel resistors
 - e. RC circuits

Exam 3 Wed Aug 1st**Lectures 17-19 (8/1-8/3)**

8. Chapter 29
 - a. Magnetism
 - b. Source of magnetic field of moving charges
 - c. Magnetic field of a current
 - d. Magnetic dipoles
 - e. Magnetic forces
 - f. Forces and torques
9. Chapter 30
 - a. Induced currents
 - b. Motional emf
 - c. Magnetic flux
 - d. Lenz's law
 - e. Faraday's law
 - f. Induced fields
 - g. LC circuits

Final exam Monday, August 6th