PHYS 2321 Introductory Electromagnetism (CRN 19688)

CRN:  19688  
Term:  Fall 2022  
Prerequisite: PHYS2320 and MATH 1312  
(MATH 1312 may be taken concurrently with PHYS2321)

Lecture  
Lecture hours: TR 12:00 pm – 1:20 pm  
Location:  Geology Building (GEOL) 123

Instructor:  Prof. Yun-Pil Shim  
Office:  PSCI 121A  
E-mail:  yshim@utep.edu  
Office hours:  By appointment

Course Description and Objectives

In this course, you will learn basic concepts of electricity and magnetism. “Charge” is one of the most fundamental properties of particles, and electrical fields and potentials arise from the charges. Moving charges (“current”) causes the magnetic field. The relations between the charge and the electric and magnetic fields are summarized in the Maxwell’s equations. Electricity and magnetism are closely connected and they can form the electromagnetic waves.

1) Learn the basic concepts of electromagnetism: charge, field, potential  
2) Understand the connection between electricity and magnetism  
3) Learn how to set up and solve problems applying concepts and mathematical tools learned in class.

Communication

The main communication method is the Blackboard announcement and email.  
**Do NOT use the Course Messages in Blackboard. I am not checking it.**

When you email me, include the following:  
Your name and UTEP ID  
The course name and CRN

Seminars (Workshops)

You need to sign up for one of the seminar courses.  
TA’s will solve example problems in each workshop session and give quizzes.  
You should sign up for one of the following Seminar courses.

<table>
<thead>
<tr>
<th>CRN</th>
<th>Day</th>
<th>Time</th>
<th>Location</th>
<th>TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>19876</td>
<td>R</td>
<td>9:00am-9:50am</td>
<td>Old Main 214</td>
<td>TBA</td>
</tr>
<tr>
<td>19915</td>
<td>R</td>
<td>3:00pm-3:50pm</td>
<td>Education Building 305</td>
<td>TBA</td>
</tr>
<tr>
<td>19850</td>
<td>F</td>
<td>11:00am-11:50am</td>
<td>UGLC 208</td>
<td>TBA</td>
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Seminars will begin on week 2 (week of August 29).
**Lab for PHYS2321**

If you signed up for the associated lab course (PHYS2121), the lab is managed independently. Any questions about the lab should be sent to the lab coordinator, Karla Carmona (kcarmona@utep.edu). Labs will begin on the week of September 12 – September 16.

**Miner Learning Center Tutoring Service**

This course is supported by the Miner Learning Center (MLC) with complimentary tutoring services. Our tutors are Nicholas A. Lopez and Daniel Rascon Romo. Watch for announcements on Blackboard for details.

**Grade**

**Grading Policy:**
- Syllabus exam: 5%
- Attendance: 10%
- Homework: 30%
- Seminars: 10%
- Mid-term exam: 20%
- Final exam: 25%

The final grade will be determined by your score and the overall performance of the class. If your final score is
  - 90 or above: your grade will be A.
  - 80 or above and below 90: your grade will be B or better.
  - 70 or above and below 80: your grade will be C or better.
  - 60 or above and below 70: your grade will be D or better.

**DO NOT ASK FOR ANY EXTRA CREDIT.**

Late submission of homework will be penalized by 10%/day.
Make-up exams will be granted only in extraordinary circumstances.

**Exams: Syllabus exam + Midterm exams + Final exam**

**Syllabus exam (5%):**
The syllabus exam will be on Blackboard. Finish it by September 9th.

**Midterm exams (20%):**
The midterm exam will be on **Tuesday, October 4, 12:00pm – 1:20pm.**
It will cover chapters 22 – 26.
Midterm exams will be taken during class hours.

**Final exam (30%):**
The final exam is on **Tuesday, Dec 6, 1:00 pm – 3:45 pm.**
It will be a comprehensive exam (covering chapters 22-32).

More details about midterm and final exams will be announced before each exam.
Attendance

Attendance will be checked at the beginning of a class at random. If you can’t attend the class due to a legitimate reason, inform me in advance and get approval. If you miss a class due to an emergency, you need to provide documents to prove the emergent situation as soon as possible.

Textbook and Homework

Textbook:
Physics for Scientists & Engineers: A Strategic Approach (By Randall D. Knight, 4th Edition)

The class will follow the textbook, and homework problems will come from the problems at the end of the chapters. Renting or buying the textbook is strongly encouraged.

Online homework: Mastering Physics, Pearson
Course name: PHYS2321_Shim_Fall2022
Course ID: shim14975
Student Registration Instruction for Mastering Physics is on the Blackboard.

Full access to the Mastering Physics website is required (Temporary access will expire in 14 days).

Regular homework will typically be available each Thursday and the due date is next Sunday. (You will have about 10 days to finish each homework.) Pay attention to the deadline. Late submission will be penalized by 10%/day.

There are three introductory homework due on 12/03, but try to complete them as soon as you can.
  Intro to MasteringPhysics (no credit)
  Physics Primer (extra credit)
  Mathematical Review (extra credit)
Course Overview and Weekly Schedule

Course overview

Ch. 22 Electric Charges and Forces
Ch. 23 The Electric Field
Ch. 24 Gauss's Law
Ch. 25 The Electric Potential
Ch. 26 Potential and Field
Ch. 27 Current and Resistance
Ch. 28 Fundamentals of Circuits
Ch. 29 The Magnetic Field
Ch. 30 Electromagnetic Induction
Ch. 31 Electromagnetic Fields and Waves
Ch. 32 AC Circuits

Weekly Course Schedule (subject to change)

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Lecture</th>
<th>Homework</th>
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<tbody>
<tr>
<td>Week1</td>
<td>Aug 23 &amp; Aug 25</td>
<td>Intro/Chapter 22</td>
<td>Homework #1</td>
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<tr>
<td>Week2</td>
<td>Aug 30 &amp; Sep 1</td>
<td>Chapter 23</td>
<td>Homework #2</td>
</tr>
<tr>
<td>Week3</td>
<td>Sep 6 &amp; Sep 8</td>
<td>Chapter 24</td>
<td>Homework #3</td>
</tr>
<tr>
<td>Week4</td>
<td>Sep 13 &amp; Sep 15</td>
<td>Chapter 25</td>
<td>Homework #4</td>
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<tr>
<td>Week5</td>
<td>Sep 20 &amp; Sep 22</td>
<td>Chapter 26</td>
<td>Homework #5</td>
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<tr>
<td>Week6</td>
<td>Sep 27 &amp; Sep 29</td>
<td>Review #1, Review #2</td>
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<tr>
<td>Week7</td>
<td>Oct 4 &amp; Oct 6</td>
<td>Midterm Exam, Chapter 27</td>
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<tr>
<td>Week8</td>
<td>Oct 11 &amp; Oct 13</td>
<td>Chapter 27, Chapter 28</td>
<td>Homework #6</td>
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<tr>
<td>Week9</td>
<td>Oct 18 &amp; Oct 20</td>
<td>Chapter 28, Chapter 29</td>
<td>Homework #7</td>
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<tr>
<td>Week10</td>
<td>Oct 25 &amp; Oct 27</td>
<td>Chapter 29</td>
<td>Homework #8</td>
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<tr>
<td>Week11</td>
<td>Nov 1 &amp; Nov 3</td>
<td>Chapter 30</td>
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<tr>
<td>Week12</td>
<td>Nov 8 &amp; Nov 10</td>
<td>Chapter 30, Chapter 31</td>
<td>Homework #9</td>
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<tr>
<td>Week13</td>
<td>Nov 15 &amp; Nov 17</td>
<td>Chapter 31, Chapter 32</td>
<td>Homework #10</td>
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<tr>
<td>Week14</td>
<td>Nov 22 &amp; Nov 24</td>
<td>Chapter 32, Thanksgiving</td>
<td>Homework #11</td>
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<tr>
<td>Week15</td>
<td>Nov 29 &amp; Dec 1</td>
<td>Review #3, Review #4</td>
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<tr>
<td>Week16</td>
<td>Dec 6</td>
<td>Final Exam</td>
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Technology Requirements

Lectures are given person-to-person in the classroom unless there is a change in the COVID19 situation and the class is turned into online.

Lecture slides will be available on Blackboard after lectures.

Midterm and final exams will be in-person.
No use of anything that can access the internet is allowed during exams.

Course communication will be via email and Blackboard.
Ensure your UTEP email account is working.
Check the Blackboard for announcements.

When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

Homework is online at the Mastering Physics website.
You will have to get access to Mastering Physics and register for the course.
See the Registration Instruction on the course Blackboard page.

IMPORTANT: If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP Help Desk (https://www.utep.edu/technologysupport/) as they are trained specifically in assisting with the technological needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you!

Course Policies

COVID-19 Precautions:
Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID 19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org

Students with Disabilities:
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, Room 106. For additional information, please visit the CASS website at https://www.utep.edu/student-affairs/cass/. Accommodations might include but are not limited to note takers, readers, or extended time on exams and assignments. Please take care of this as soon as possible and before the first exam.
**Scholastic Integrity:**
Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.