Textbooks and/or Resource Materials

Course Description and Prerequisites
Topics covered include: vector analysis, electrostatic and magnetostatic fields, Maxwell’s equations and electromagnetic wave propagation and applications.

Prerequisites: ELEE 2305 (Electrical Circuits I), MATH 2415 (Calculus III) and PHYS 2426 (Physics II)

Learning Objectives/Outcomes for the Course
To understand theories, concepts, and ideas of electromagnetics, and then can relate them to economically important electromagnetics applications. Students will also exercise mathematical vector analysis skills.

At the end of the semester, it is expected that students should be able to:
1. Understand and implement vector analysis including vector algebra, coordinate systems and transformation, and vector calculus to electromagnetics problems.
2. Understand electrostatic fields, electric fields in materials space, and analyze electrostatic boundary-value problems, and electrostatics applications.
3. Understand magnetostatic fields, magnetic forces, materials and devices, and analyze magnetostatic problems and applications.
4. Understand Maxwell’s equations, electromagnetic wave propagation, and analyze electromagnetic problems and applications.

Learning Objectives for Core Curriculum Requirements
To learn basic principles of electromagnetics, including:
   a. Fundamental definitions and conventions
   b. Fundamental laws governing electromagnetics
   c. Analysis of electrostatics and applications
   d. Analysis of magnetostatics and applications
   e. Analysis of Maxwell’s equations, wave propagation and applications

This course satisfies a core curriculum requirement and matches the following outcomes set by the Texas Higher Education Coordinating Board (THECB) outcomes: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Social Responsibility, and Personal Responsibility.

Grading Policies
1. Examinations (Closed book; related formulas will be provided) 80%
2. Quizzes + Attendance 10%
3. Homework 10%

The grades for this course will be assigned according to the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>&gt;= 80</td>
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<tr>
<td>B</td>
<td>70 - 79</td>
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<tr>
<td>C</td>
<td>60 - 69</td>
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<tr>
<td>D</td>
<td>50 - 59</td>
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<tr>
<td>F</td>
<td>&lt; 50</td>
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Contents/Calendar: Subject to change as the semester progresses.

<table>
<thead>
<tr>
<th>Part 1: Vector Analysis (6)</th>
<th>Exam 1: 5%</th>
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<tbody>
<tr>
<td>1. Vector Algebra</td>
<td>9:25-10:40</td>
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<tr>
<td>2. Coordinate Systems and Transformation</td>
<td>September 20th, 2016 (Wednesday)</td>
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<td>3. Vector Calculus</td>
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<thead>
<tr>
<th>Part 2: Electrostatics &amp; Applications (8)</th>
<th>Exam 2: 25%</th>
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<tr>
<td>4. Electrostatic Fields</td>
<td>9:25-10:40</td>
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<tr>
<td>5. Electric Fields in Material Space</td>
<td>October 18th, 2016 (Wednesday)</td>
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<tr>
<td>6. Electrostatic Boundary-Value Problems</td>
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<td>7. Electrostatic Applications</td>
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<tr>
<th>Part 3: Magnetostatic Fields &amp; Applications (6)</th>
<th>Exam 3: 25%</th>
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<tr>
<td>8. Magnetostatic Fields</td>
<td>9:25-10:40</td>
</tr>
<tr>
<td>9. Magnetic Forces, Materials and Devices</td>
<td>November 8th, 2016 (Wednesday)</td>
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<tr>
<td>10. Magnetostatic Applications</td>
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<tr>
<th>Part 4: Waves and Applications (6)</th>
<th>Exam 4: 25%</th>
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<tbody>
<tr>
<td>11. Maxwell’s Equations</td>
<td>9:25-10:40</td>
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<tr>
<td>12. Electromagnetic Wave Propagation</td>
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</tr>
<tr>
<td>13. Electromagnetics Applications</td>
<td>December 6th, 2016 (Wednesday)</td>
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Requirements:

**Homework:** Approximately one homework per week. Students are allowed and encouraged to discuss homework assignments and work together. However, the material you turn in should be your own work in your own writing. I will check that you attempt all problems. The solution will be posted on the BlackBoard right after the deadline.

**Quizzes:** There will be approximately one 15-minute quiz per week.

**Examinations:** Four exams. If you cannot make the specified exam time, please notify me before the exam to make alternate arrangements.

Calendar of Activities

Include in this section a table or list that provides information for students regarding important dates, assignments or activities. The UTRGV academic calendar can be found at [https://my.utrgv.edu/home](https://my.utrgv.edu/home) at the bottom of the screen, prior to login. Some important dates for Fall 2017 include:

- **August 28**  
  First day of classes
- **August 31**  
  Last day to add a course or register for fall 2017
- **September 4**  
  Labor Day – NO classes
- **November 15**  
  Last day to drop a course; will count toward the 6-drop rule
- **November 23 – 26**  
  Thanksgiving Holiday – NO classes
- **December 6**  
  Last day of classes
- **December 7**  
  Study Day – NO class
- **December 8-14**  
  Fall 2017 Final Exams
- **December 15-16**  
  Commencement Ceremonies
UTRGV Policy Statements
The UTRGV disability accommodation, mandatory course evaluation statement and sexual harassment statement are required on all syllabi. Additional policy statements are optional, such as those covering attendance, academic integrity, and course drop policies.

STUDENTS WITH DISABILITIES:
Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services. Brownsville Campus: Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. Edinburg Campus: Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

MANDATORY COURSE EVALUATION PERIOD:
Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available:
- Fall 2017 Module 1 Oct. 5 – Oct. 11
- Fall 2017 Module 2 Nov. 29 – Dec. 5
- Fall 2017 (full semester) Nov. 15 – Dec. 6

ATTENDANCE:
Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

SCHOLASTIC INTEGRITY:
As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; 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. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:
In accordance with UT System regulations, your instructor is a “Responsible Employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.

COURSE DROPS:
According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that
undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.