Syllabus for PHYS 409 (Section 1)
Electromagnetism I – Fall 2019

Class Location / Times: Tuesdays and Thursdays, 10:50 AM - 12:05 PM, RITA 363

Instructor Information: Dr. Mike Larsen
Office Phone: 843-953-2128
Instructor Email Address: LarsenML@cofc.edu
Office Location: RITA 317
Larsen Research Lab Location: RITA 392

Office Hours: Mondays 4-5 PM, Wednesdays 10-11 AM, Thursdays 8-9 AM, or by appointment.

Prerequisite: (PHYS 112 or HONS 158) and (MATH 323 or PHYS 272) or Permission of the instructor
Course Webpage: http://larsenml.people.cofc.edu/phys409_fall19.html
(Please see course page for full description of course, rationale, and supplementary information).

Official Course Description

> This is an intermediate course in electromagnetism with particular emphasis to electrostatics and magnetostatics. The major topics covered in this course are: electrostatic fields; magnetostatic fields; electric current and Lorentz force law; conductors, capacitors, and dielectric materials; magnetic materials; and electromagnetic induction.

Attendance Policy
It is expected that you will attend class. I will. You are responsible for any material missed in class, including announcements about homework/test date changes, etc.

Students with Disabilities
The College will make reasonable accommodations for persons with documented disabilities. Students should apply at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center, Suite 104. Students approved for accommodations are responsible for notifying your professor as soon as possible and subsequently contacting your professor again at least one week before any specific accommodation is needed.

Honor Code / Code of Conduct

It is expected that you will adhere to the university's honor code and student code of conduct as can be found in your student handbook: https://tinyurl.com/cofc-handbook.

Textbook and References

The textbook for this course is:

Griffiths, D.J. (2013). *Introduction to Electrodynamics* (4th Ed.) Prentice Hall.

This is *by far* the most widely used upper-level undergradaute text on this subject; it is worth owning. Additional information about this text and other texts you may want to use as supplementary sources can be found at http://larsenml.people.cofc.edu/phys409_texts.pdf.

Classroom Policies

Please treat your classmates and professor with the respect due to them as fellow adults and human beings. Your professor always reserves the right to dismiss you from the room. Please do not text message, browse the internet, check email, or engage in other non-class-related communications during class.

Cell Phone Policy

Be considerate and turn your phone on vibrate or silent during lectures. Also, all cell phones must be turned off, put away, and remain invisible during all exams. You may be asked to leave your cell phone at the front desk during your midterms and/or final.

Final Exam Time Period:

Tuesday, December 10th, 8-11 AM

Tentative Midterm Test Dates (Subject to Change):

Tuesday, September 17th
Tuesday, October 22nd
Tuesday, November 19th

Campus Closure Statement

If the College of Charleston closes due to inclement weather, students are responsible for taking course materials with them and continuing to work on assigned homework as posted on the course webpage. In cases of extended periods of institution-wide closure where students have relocated, your professor will post a plan for proceeding with course content on the course webpage and/or communicate through your official CofC email accounts.

Grading

Grading Scale: The formal numerical scale might move around a little bit depending on the class performance, but the final grading scale will be *no more stringent* than:

A	≥91	B+	89	B-	80	C	71-78	D	60 - 69
A-	90	B	81-88	C+	79	C-	70	F	<60

Your course grade will be based on 3 components:

a) Homework (30% of course grade). Homework will be assigned most weeks. Homework assignments are to be completed clearly and legibly and turned in on time. (Homework turned in Tuesday will be returned on Thursday, so work more than one class late will generally not be accepted; even penalties for turning in work a few hours late will be Draconian because I will need to spend most of the time between your Tuesday and Thursday classes grading).

You are encouraged to seek help from your instructor, your classmates, and anyone else who can help you with your homework. However, your answers should not be exact copies of a classmate's work. Cooperation is ok, but everyone should turn in their own solutions! (See more complete explanation of this policy on header material of HW01). At the end of the semester, I will drop the grade from your lowest homework score.

b) Midterm Exams (45% of course grade total, split evenly between 3 exams).

c) Final Exam (25% of course grade).

Note that your worst midterm exam score will be dropped so long as you perform better on your final than your lowest midterm (your final exam score counts for 25% of your course grade AND replaces your lowest midterm score if it is better than your lowest midterm score). Because of this, *no make-up tests will be given for any reason.* If you have a known conflict, approach your instructor *well in advance of the test* to arrange to take the exam *before* it is scheduled. If illness or other unexpected conflict develops, you will merely need to replace the score of "0" from the missed exam with your final exam score. (If you miss two exams, you are very unlikely to pass the class).

Specific Course Objectives

Throughout this course, we endeavor to develop an understanding of:

- electrostatics and magnetostatics in a vacuum.

- electrostatics and magnetostatics in matter.

- electrodynamics.

Student Learning Outcomes

At the conclusion of the course, the successful student will be able to:

- solve basic problems in electrostatics and magnetostatics

- solve basic boundary value problems in electricity and magnetism

- use Maxwell's equations to describe the time evolution of electric and magnetic fields