

ECE 3318

Applied Electricity and Magnetism

Spring 2023

Prof. David R. Jackson
Dept. of ECE



Notes 1

Introduction

Notes prepared by the EM Group
University of Houston

Class Blackboard Site

Please check the “**Announcements**” section of the class Blackboard site often.

You are responsible for everything that is there.

Important Things

- Please read the **syllabus** carefully! You are responsible for everything on it! (It is on the Blackboard site.)
- Please read the **UH Academic Honesty Policy** in the online version of the Student handbook (the website is in the syllabus).
- Fill out the **Academic Honesty and Syllabus form**, sign it, and return it by the deadline indicated (Jan. 31, 2023) or else you may be dropped. The form is on the class Blackboard site.

Note on Attendance

Class attendance is required:

- Class attendance may be taken randomly
- Pop quizzes may be given.

These are more likely to happen if attendance starts to drop.

If you have three unexcused absences, you may be dropped at any time or fail the course.

To have an absence excused, you must get permission from the instructor before class begins.

Prerequisite Letter

If you get a letter, the ECE department thinks you are missing one or more course requirements.

Prerequisites:

ECE 2202: (Circuit Analysis II)

Prerequisite Letter (cont.)

If you get a letter you must respond to it and return it to the Department front office (N308-D) by the deadline indicated on the form or you will be dropped.

Any questions about the form...please see Prof. Trombetta in the Department of ECE.

What is this Course About?

Introduction to Electromagnetism (electric and magnetic fields)

- In this course we mainly study statics and low-frequency fields.
- In ECE 3317, we study dynamics and high-frequency fields.

Class Notes

The class notes are on the class Blackboard website (both pptx and pdf versions).

If you have trouble reading the equations in the pptx version, you are most likely having a font problem due to missing MathType fonts.

Here is what you can do:

- Use the pdf version of the class notes.
- Install MathType: see Arturo Padilla in the Engineering Computing Center to get a copy of it (apadilla@central.uh.edu)

MathType

Advantages of MathType:

- Easy to use
- Directly integrates in with Microsoft Word (and PowerPoint)
- Professional looking equations
- Can create inline or stand-alone (“displayed”) equations
- Allows for automatic numbering of equations*
- Allows for automatic referencing of equations*

* If you add or delete an equation, all of the equation numbers are automatically updated, both in the equations and in the text.

MathType (cont.)

Examples:

This is an “inline” equation: $y = x^2$.

The equation number is added and updated automatically.

Equation (4) is a “displayed” equation (equation on a separate line):

$$\begin{aligned} \int_V -\frac{1}{2}(\underline{E} \cdot \underline{J}^{i*} + \underline{M}^i \cdot \underline{H}^*) dV &= \oint_S \underline{S} \cdot \hat{n} dS \\ &+ 2j\omega \int_V \left(\frac{1}{4} \mu' |\underline{H}|^2 - \frac{1}{4} \varepsilon'_c |\underline{E}|^2 \right) dV \\ &+ \int_V \left(\frac{1}{2} \omega \varepsilon''_c |\underline{E}|^2 + \frac{1}{2} \omega \mu'' |\underline{H}|^2 \right) dV. \end{aligned} \tag{4}$$