

# PHYS 325

## Electromagnetic Theory

Mount Holyoke College - Fall 2008

Meeting Times:

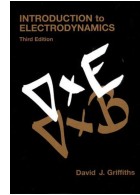
**Clapp Laboratory 218 – TTh 11:00a – 12:15p [\*\*the location has changed\*\*]**

Instructor: <b>Rob Salgado</b> <b>Visiting Assistant Professor of Physics</b> Office: <b>Kendade 215</b> Voice: <b>(413)-538-2816</b>	Email (the best way to contact me): <b>rsalgado@mtholyoke.edu</b> Instant-Messengers: AOL, MSN, Yahoo: <b>mhcpyrob</b> (do <i>not</i> email here)	Office hours: <b>-to be announced</b>
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Catalog Description:

**PHYS 325 – Electromagnetic Theory (4 credits) - [64650]**

This course presents the development of mathematical descriptions of electric and magnetic fields; study of interactions of fields with matter in static and dynamic situations; mathematical description of waves; and development of Maxwell's equations with a few applications to the reflection and refraction of light and microwave cavities. [Prerequisite: PHYS 301, 315 or 324.]



Required Textbook:

**“Introduction to Electrodynamics (3rd Ed)”**,  
 David Griffiths [Benjamin Cummings (1999), ISBN: 013805326X]

Electronic Materials:

I will maintain a website (for now: <http://www.mtholyoke.edu/~rsalgado/325/>) that links to homework assignments, solutions, electronic-whiteboard notes, and handouts.

Course Goals:

- A. To further develop concepts in electromagnetism, especially the field concept.
- B. To reinforce important concepts in physics and mathematics.
- C. To further develop physical intuition, mathematical reasoning, and problem solving skills.
- D. To further prepare students for the necessarily rigorous sequence in physics and engineering.

Course Requirements:

Come to class **ON TIME and AWAKE**.  
 Attendance is **REQUIRED**.  
 Come to class PREPARED and EQUIPPED, having read or written any assignments.

Homework (assigned periodically):

Homework will be assigned and graded. (Late homework loses 10% per day.)  
Most of the learning you do in this course is done by your doing homework problems outside of class! (I am merely a guide for you.)  
 You are strongly encouraged to discuss the homework with other students. However, be sure that you can do the homework *by yourself* and that you present your own work. You can always ask me for help after you have made an effort.

Grades are roughly weighted as follows:

- 40% HOMEWORK
- 20% EXAM #1 (open notes and textbook, take-home)
- 20% EXAM #2 (open notes and textbook, take-home)
- 20% FINAL EXAM (open notes and textbook, take-home)

Sequence of PHYS 325 topics:

- (Ch 1) Vector Analysis
- (Ch 2) Electrostatics
- (Ch 3) Special Techniques
- (Ch 4) Electric Fields in Matter
- (Ch 5) Magnetostatics
- (Ch 6) Magnetic Fields in Matter
- (Ch 7) Electrodynamics
- \*(Ch 8) Conservation Laws - \*time permitting
- \*(Ch 9) Electromagnetic Waves - \*time permitting

2008 September							October							November							December						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
				4							2														2		4
		9		11					7		9	=				4		6					9		11		
		16		18			BREAK =		16							11		13							====EXAMS====		
		23		25					21		23					18		20									
		30							28		30					25		THANKSGIVING									

Away giving a seminar:  
(a Tuesday yet to be determined)

At a Conference:  
Oct 24-26

Final Exam