Course Syllabus

PHYS 4420: Classical Physics II

Lecture

MW 9:40-11:35 AM, AEB 310

Course Description

This course will develop the subject of Electrodynamics, the motion and forces of electrically charged particles. We will develop from electrostatics through magnetostatics to induction and freely propagating electromagnetic fields. In the process we will develop Maxwell's Equations.

Prerequisites: PHYS 4410, and MATH 3140 or MATH 3150 or MATH 5440.

Instructor

Douglas Bergman

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Office hours: T 2-3

TA

Rong (Cassie) Zhang

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Textbook

Introduction to Electrodynamics (4th Edition), Griffiths, Pearson, 2013. ISBN-10: 0-321-85656-2, ISBN-13: 978-0-321-85656-2.

Homework

There will be roughly one homework per week (assigned Wednesday, due in class the following

Wednesday). The graded homework will be returned on Wednesdays. Students are expected to attempt problems on their own. Discussions with other students are permitted, but students should turn in their own work. Half of some Wednesday class sessions will be devoted to problem solving, together with a discussion of the graded homework. The first homework will be due on January 17.

Exams

There will be two 1-hour midterm exams: 2018/02/14 and 2018/03/28, to be administered during the regular class time and in the class room. There will be a two-hour final examination on 2018/05/02 at 8:00 AM in the class room.

ADA Statement

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.

Rights & Responsibilities

All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, and I will do so, beginning with verbal warnings and progressing to dismissal from and class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.

Weekly Schedule

Week 1 (1/8-10): Electric Field

Week 2 (1/17): Electric Potential

Week 3 (1/22-24): Conductors; Laplace Equation

Week 4 (1/29-31): Images, Separation of Variables, Multipole Expansion

Week 5 (2/5-7): Electric Field in Matter

Week 6 (2/12-14): Dielectrics; Midterm 1

Week 7 (2/21): The Lorentz Force

Week 8 (2/26-28): Magnetostatics

Week 9 (3/5-7): Magnetic Field in Matter

Week 10 (3/12-14): Electrodynamics

Week 11 (3/26-28): Maxwell's Equations; Midterm 2

Week 12 (4/2-4): Conservation Laws; EM Waves

Week 13 (4/9-11): EM Waves; Potentials & Fields

Week 14 (4/16-18): Radiation

Week 15 (4/23): Special Relativity

Course Summary:

| Date		Details	
Mon Jan 8, 2018	📝	**Griffiths 2-1 (https://utah.instructure.com/courses/474553/assignments/4493340)**	due by 11:59pm
Wed Jan 10, 2018	📝	**Griffiths 2-2 (https://utah.instructure.com/courses/474553/assignments/4493341)**	due by 11:59pm
Wed Jan 17, 2018	📝	**Homework 1 (https://utah.instructure.com/courses/474553/assignments/4493824)**	due by 10:40am
	📝	**Griffiths 2-3 (https://utah.instructure.com/courses/474553/assignments/4493343)**	due by 11:59pm
Mon Jan 22, 2018	📝	**Griffiths 2-4, 2-5 (https://utah.instructure.com/courses/474553/assignments/4493344)**	due by 11:59pm
Wed Jan 24, 2018	📝	**Homework 2 (https://utah.instructure.com/courses/474553/assignments/4493825)**	due by 10:40am

	Griffiths 3-1 (https://utah.instructure.com/courses/474553/assignments/4493774)	due by 11:59pm
Mon Jan 29, 2018	**Griffiths 3-2, 3-3** (https://utah.instructure.com/courses/474553/assignments/4493775)	due by 11:59pm
Wed Jan 31, 2018	**Homework 3** (https://utah.instructure.com/courses/474553/assignments/4493826)	due by 10:40am
	Griffiths 3-4 (https://utah.instructure.com/courses/474553/assignments/4493776)	due by 11:59pm
Mon Feb 5, 2018	**Griffiths 4-1, 4-2** (https://utah.instructure.com/courses/474553/assignments/4493777)	due by 11:59pm
Wed Feb 7, 2018	**Homework 4** (https://utah.instructure.com/courses/474553/assignments/4493828)	due by 10:40am
	Griffiths 4-3 (https://utah.instructure.com/courses/474553/assignments/4493778)	due by 11:59pm
Mon Feb 12, 2018	**Griffiths 4-4** (https://utah.instructure.com/courses/474553/assignments/4493779)	due by 11:59pm
Wed Feb 14, 2018	**Midterm 1** (https://utah.instructure.com/courses/474553/assignments/4493782)	due by 10:40am
Wed Feb 21, 2018	**Homework 5** (https://utah.instructure.com/courses/474553/assignments/4493829)	due by 10:40am
	Griffiths 5-1 (https://utah.instructure.com/courses/474553/assignments/4493781)	due by 11:59pm
Mon Feb 26, 2018	**Griffiths 5-2, 5-3** (https://utah.instructure.com/courses/474553/assignments/4493783)	due by 11:59pm
Wed Feb 28, 2018	**Homework 6** (https://utah.instructure.com/courses/474553/assignments/4493833)	due by 10:40am
	Griffiths 5-4 (https://utah.instructure.com/courses/474553/assignments/4493784)	due by 11:59pm
Mon Mar 5, 2018	**Griffiths 6-1, 6-2** (https://utah.instructure.com/courses/474553/assignments/4493787)	due by 11:59pm

Wed Mar 7, 2018	📝	**Homework 7** **(https://utah.instructure.com/courses/474553/assignments/4493834)**	due by 10:40am
	📝	**Griffiths 6-3, 6-4** **(https://utah.instructure.com/courses/474553/assignments/4493788)**	due by 11:59pm
Mon Mar 12, 2018	📝	**Griffiths 7-1, 7-2** **(https://utah.instructure.com/courses/474553/assignments/4493789)**	due by 11:59pm
Wed Mar 14, 2018	📝	**Homework 8** **(https://utah.instructure.com/courses/474553/assignments/4493836)**	due by 10:40am
	📝	**Griffiths 7-2** **(https://utah.instructure.com/courses/474553/assignments/4493790)**	due by 11:59pm
Mon Mar 26, 2018	📝	**Griffiths 7-3** **(https://utah.instructure.com/courses/474553/assignments/4493791)**	due by 11:59pm
Wed Mar 28, 2018	📝	**Midterm 2** **(https://utah.instructure.com/courses/474553/assignments/4493793)**	due by 10:40am
Mon Apr 2, 2018	📝	**Griffiths 8-1, 8-2** **(https://utah.instructure.com/courses/474553/assignments/4493792)**	due by 11:59pm
Wed Apr 4, 2018	📝	**Homework 9** **(https://utah.instructure.com/courses/474553/assignments/4493837)**	due by 10:40am
	📝	**Griffiths 9-1** **(https://utah.instructure.com/courses/474553/assignments/4493794)**	due by 11:59pm
Mon Apr 9, 2018	📝	**Griffiths 9-2, 9-3** **(https://utah.instructure.com/courses/474553/assignments/4493796)**	due by 11:59pm
Wed Apr 11, 2018	📝	**Homework 10** **(https://utah.instructure.com/courses/474553/assignments/4493839)**	due by 10:40am
	📝	**Griffiths 10-1, 10-2** **(https://utah.instructure.com/courses/474553/assignments/4493797)**	due by 11:59pm
Mon Apr 16, 2018	📝	**Griffiths 10-3, 11-1** **(https://utah.instructure.com/courses/474553/assignments/4493798)**	due by 11:59pm
	📝	**Homework 11** **(https://utah.instructure.com/courses/474553/assignments/4493841)**	due by 10:40am

Wed Apr 18, 2018	📝	**Griffiths 11-2 (https://utah.instructure.com/courses/474553/assignments/4493799)**	due by 11:59pm
Mon Apr 23, 2018	📝	**Griffiths 12 (https://utah.instructure.com/courses/474553/assignments/4493800)**	due by 11:59pm
Wed May 2, 2018	📝	**Final Exam (https://utah.instructure.com/courses/474553/assignments/4493823)**	due by 10am