## **PHYSICS 712 – Electricity and Magnetism**

Monday, Wednesday, and Friday, 10:00-11:50, Olin 103

**Instructor:** Eric Carlson Office Hours

Office: 306 Olin Physical Laboratory Tuesday, Thursday 10-12

My Web: http://users.wfu.edu/ecarlson or any time by appointment

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**Text:** Electricity and Magnetism, 3<sup>rd</sup> edition, by J.D. Jackson

**Description:** This course is a one semester course on electricity and magnetism. As this is the first time I've taught it, I have no idea exactly what we'll be going

**Materials:** A scientific calculator is considered a necessity, though I'm not sure how much you will actually use it. It is highly advisable to have access to a symbolic manipulation program, like *Maple*.

**Exams:** There will be a midterm on Friday, March 4, from 10-12, and a final exam possibly from 9-12 on Friday, April 29.

**Homework:** There will be homework assignments almost every day. I suggest you get started on your homework early. You should attempt to do the homework by yourself, but if you get stuck, you should feel free to talk to your friends, or myself. In particular, you should also feel free to check your final answers with your friends. Part of doing physics is interacting with others. You must ultimately understand and have performed all the calculations in your homework yourself, but I do not mind if others have helped you with it.

**Attendance:** Attendance is expected every class period, but if you have to be away, just let me know. I do not grade on attendance, but I expect it.

**Grading:** The two tables at right are a not necessarily accurate guess as to what my grading scheme will be. In particular, I reserve the right to grade on a sliding scale.

Grading Breakdown		Grading Scale			
Homework:	50%	94% Å	83% B	73% C	
Midterm:	20%	90% A-	80% B-	70% C-	
Final:	30%	87% B+	77% C+	<70% F	

I anticipate that most people in this class will get A's or B's. If you are getting C's on homework, you probably are confused and will get more confused, and it's time to get some help. If you are getting B's, you probably are understanding most of the material, though you may be having some difficulty. If you are getting A's, you are understanding a lot and are working hard.

**Web:** The website for this class is http://users.wfu.edu/ecarlson/eandm/index.html. I hope to post almost all materials for the class on the web, but this will depend on how much I can keep up with my intended schedule

## **Tentative Schedule:**

January		13	15	Introduction, electrostatics
January		20	24	Boundary-Value Problems in Electrostatics
January	25	27	29	Boundary-Value Problems in Electrostatics
February	1	3	5	Multipoles and Electrostatics of Macroscopic Media
February	8	10	12	Magnetostatics
February	15	17	<del>19</del>	Magnetostatics (class cancelled on Feb. 19)
February	22	24	26	Maxwell Equations and Macroscopic Electromagnetism
Feb/March	29	2	4	Review, Midterm Exam
March	14	16	18	Plane Electromagnetic Waves
March	21	23		Waveguides and Resonant Cavities
March/Apr	. 28	30	1	Radiating Systems and Radiation
April	4	6	8	Scattering and Diffraction
April	11	13	15	Special Theory of Relativity
April	18	20	22	Dynamics of Relativistic Particles
April	25	27	<b>29</b>	Review, Final Exam