

PHYC 511, SPRING 2011

GENERAL INFORMATION

Instructor: Prof. Huaiyu "Mike" Duan, duan@unm.edu, P&A 1144, 505-277-1508

TA: ??, ??, P&A ??, ???-???-????

Class schedule: 11:00 AM -- 12:15 PM on Tuesday and Thursday, P&A 184

Problem session (PHYC551.056, CRN 42474): 9:00 -- 9:50 AM on Friday, P&A 184

Instructor's office hour: 2:00 -- 3:00 PM on Thursday, P&A 1144. You are also welcome to meet me in my office when the door is open and when I am not talking with other people.

TA's office hour: ??? -- ??? PM on ??, P&A ?.

This course is web enhanced. So check WebCT (<http://vista.unm.edu/webct>) periodically for resources such as lecture notes and problem solutions.

MAKE SURE THAT WEBCT FORWARD EMAILS TO YOUR REGULAR EMAIL ACCOUNT.

It is expected that you have taken undergraduate E&M (PHYC405/406) and Methods of Theoretical Physics (PHYC466) or equivalents before registering for this course.

TEXTBOOK AND SUPPLEMENTARY BOOKS

We will use *Classical Electrodynamics* by J. D. Jackson, published by Wiley, 3rd edition as the main textbook.

Supplementary texts

- ★ *Introduction to Electrodynamics* by D. J. Griffiths (This book is used as the textbook for undergraduate E&M and can still be very useful.)
- ★ *Classical Field Theory* by F. E. Low
- ★ *Electrodynamics of Continuous Media* by L. D. Landau and E. M. Lifshitz
- ★ *The Classical Theory of Fields* by L. D. Landau and E. M. Lifshitz

HOMEWORK, EXAMS AND GRADES

There will be 12 **home assignments** and each of them will be graded. The grades of the 10 highest scores will count toward **20%** of the final grade. There will be **NO MAKEUP ASSIGNMENT**. Each assignment is due at the beginning of the first class of the following week. You can also submit it through WebCT or by email if you will miss the class. **NO LATE ASSIGNMENT** will be accepted because the solution will be posted shortly after.

There will be **two midterm exams**. Each exam is worth **20%** of the final grade.

The **comprehensive final exam** is worth **40%**.

Passing this course requires good problem-solving skills. It is, therefore, essential that you work out each problem in the assignments and the problem sessions.

You will receive *Credit* for the problem session as long as you register and show up for more than 60% of the time.

TOPICS

In the first third of the course we will review some relevant mathematics, electrostatics, magnetostatics and Maxwell equations (Jackson, Chap. 1--6). It is expected that you have learned all these subjects from undergraduate E&M (PHYC405/406) and Methods of Theoretical Physics (PHYC466) or equivalents before registering for this course.

The second third of the course will cover the propagation, radiation, scattering, absorption and diffraction of electromagnetic waves (Jackson, Chap. 7--10).

The last third of the course will cover special relativity and the interaction between relativistic charged particles and the electromagnetic field (Jackson, Chap. 11--16).

Obviously we cannot cover every topic in the Jackson book, which is intended to be for a two-semester course. I will select the subjects that are of general interest.