Syllabus for 3342.515
Classical ElectroMagnetism I
Spring 2006

Course:

Lecture: Mo/We 2:30–3:45 pm
Room: 028-302

Lecturer: Seonho Choi (최선호)

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Office Hours: Mo 4:00–5:00, and by appointment

Prerequisites: Introductory modern physics, undergraduate E&M, basic computer programming language skill (C, C++, FORTRAN *etc*)

Main textbook: Classical Electrodynamics, 3rd Edition by John David Jackson

References:

- Principles of Electrodynamics, Melvin Schwartz

- Classical Electrodynamics, Julian Seymour Schwinger

- The Classical Theory of Fields, Landau and Lifshitz

- Electrodynamics of Continuous Media, Landau et al.

- Electrodynamics: An Introduction Including Quantum Effects, Harald J W Müller-Kirsten

Topics to be Covered: This course will cover *classical* electrodynamics in an advanced level. Needless to say, Electrodynamics (*or* Electromagnetism *or* E&M for short) deals with physics with electric charges. From stationary charges, we have electrostatics. When charges are moving around, combined with special relativity, we have magnetism. When charges are accelerated, we

get electro-magnetic waves. For the first semester, we will deal with Chapters 1 to 7 of the text-book, which includes *Introduction to Electrostatics*, *Boundary-Value Problems in Electrostatics: I*, *Boundary-Value Problems in Electrostatics: II*, *Multipoles, Electrostatics of Macroscopic Media, Dielectrics*, *Magnetostatics, Faraday's Law, Quasi-Static Fields*, *Maxwell Equations, Macroscopic Electromagnetism, Conservation Laws* and *Plane Electromagnetic Waves and Wave Propagation*. Probably, most of these topics have already been covered during undergraduate classes somewhat in a limited way. In general, the graduate level course will require more advanced mathematics.

Homework: Homeworks will be given out on Monday in general and are due in two weeks, unless specified otherwise. There will be at least 4 homeworks during the first semester. Some homework problems are numerical calculation oriented and requires some computer programming language skill such as C-language or FORTRAN. If you are clever enough, you might be able to use Micro$oft Excel or simple programmable calculator.

Exams: There will be two exams: mid-term and final. The exams will be scheduled during regular class hours.

Grading:

Quiz	30
Homework	50
Mid-term Exam	70
Final Exam	80
Maximum	200 points

- You can not consult any books, lecture notes etc during the exams.

- There is no separate score for attendence. Planned absence to exams (in case of an emergency) should be notified as soon as possible so that you can get another chance to take the exams.