

Phys205 – Autumn 2014:

Book: D. J. Griffiths, «Introduction to Electrodynamics»

In principle the entire book from Chap 2 to Chap 12 will be covered, but parts of the subchapters will be left out on the way, some will be assumed known (relativity) a few others will be dropped due to limited time.

For early startup readers the following themes are the most important:

Electrostatics:

- I) Charges, Conservation law, Coulombs law, The electric field, Gauss law
- II) Electric potential, Poisson/Laplace equation. Solution techniques (Multipole expansion)
- III) Magnetism, Biot-Savart law, Amperes law (static case)
- IV) Maxwells equations
- V) Modifications of Maxwell equations in matter

Electrodynamics:

- VI) Faradays experiments and Maxwells equations in the time domain
- VII) Energy and Momenunt of the electromagnetic field. Poynting vector
- VIII) Electromagnetic waves, scattering.
- IX) Electromagnetic potential, gauge forms
- X) Radiation
- XI) Relativistic form and transformation properties – field equations.