

# Review of Classical Electrodynamics

## PHY603

### Course Syllabus

- Problem oriented review of Classical Electrodynamics. Electrostatics and Magnetostatics: Methods of solving electrostatic problems in cartesian, spherical and cylindrical coordinates, Green's function and Boundary value problems, both analytical and numerical solutions. Multipole expansion, Macroscopic media, Dielectrics and Magnetic media (12 lectures).
- Electrodynamics: Faraday's law, Displacement current, Poynting Vector, Conservation laws. Electromagnetic waves in free space and different media, waveguides (10 lectures).
- Radiation: Retarded potential, electric and magnetic dipole fields, linear antenna. Special Relativity: Transformation of electromagnetic fields (10 lectures).
- Scattering and diffraction, Resonant cavities, Optical fibers, Dispersion (8 lectures).

### Reference Books:

1. Griffiths, Electrodynamics
2. J. D. Jackson, Classical Electrodynamics
3. Reitz, Christy and Millford, Electrodynamics