Applied Physics (BSCS)

Instructor: Ms. Javaria Saeed

Topics to be covered:

1. Electric force and its applications and related problems
2. Conservation of charge and charge quantization
3. Electric fields due to point charge and electric field due to dipole
4. A point charge in an electric field and dipole in an electric field
5. The flux of vector field/electric field and Gauss' law
6. Applications of Gauss' law (spherically symmetric charge distribution & a charge isolated conductor)
7. Electric potential energy and equipotential surfaces
8. Electric potential, potential due to point and due to dipole
9. Calculating the potential from the field and related problem & calculating the field from the potential
10. Electric current and current density
11. Resistance, resistivity, conductivity, Ohm's law and its applications
12. The Hall effect
13. The magnetic force on a current carrying wire
14. The Biot-Savart law
15. Force between two parallel current carrying conductors
16. Ampere's Law, solenoid and toroids
17. Faraday's Law of Induction, Faraday's experiments
18. Lenz's law
19. Induced electric field and motional emf
20. The basic equation of electromagnetism and induced magnetic field
21. The displacement current
22. Polarization of electromagnetic waves and polarizing sheets & related problems
23. Reflection and Refraction of light waves
24. Total internal reflection
25. Double Slit interference (Coherence of two source interference) and related problems
26. Interference from thin films

27. Single slit diffraction (Diffraction and the wave theory & related problems

Reference/Text Books:

1. Fundamentals of Physics (Extended), 10th edition, Resnick and Walker
2. Applied Physics, 10th edition, Ewin, Schurter and Gunderson
3. A Comprehensive Textbook of Applied Physics, Manoj Kumar