4. A. Bar-lev, "Semiconductor and Electronics Devices", Prentice Hall, 3rd ed. 1993.

5. D. H. Navon and B. Hilbert, "Semiconductor Micro-devices and Materials", CBS College Publishing, 1986.

6. A. P. Malvino, "Electronic Principles", McGraw-Hill, 7th ed. 2006.

7. R. T. Paynter, "Introductory Electric Circuits", Prentice Hall, 1998.

8. Pierre Muret ,"Fundamentals of Electronics 1: Electronic Components and Elementary Functions", John Wiley & Sons, 2017.

Course Title: Applied Physics	**Course Code:** PHY-305
Course Structure: Lectures:3	**Credit Hours:** 3 (3,0)

Prerequisites:

Course Objectives:

This course covers electrostatics, electric potential, capacitors, and DC circuits. Students will understand electric charge, Coulomb's Law, and electric fields. They'll explore potential due to point charges, capacitance, and resistances in circuits. Magnetic fields and forces will be investigated, along with alternating fields, LC oscillations, and RLC circuits.

Course Outline:

Electric Filed: Electric force and its applications and related problems, conservation of charge, charge quantization, Electric fields due to point charge and lines of force. Ring of charge, Disk of charge, A point charge in an electric field, Dipole in an electric field, The flux of vector field, The flux of electric field, Gauss' Law, Application of Gauss's Law, Spherically symmetric charge distribution, A charge isolated conductor, Electric potential energy, Electric potentials, Calculating the potential from the field and related problem Potential due to point and continuous charge distribution, Potential due to dipole, equipotential surfaces, Calculating the field from the potential, Electric current, Current density, Resistance, Resistivity and conductivity, Ohm's law and its application ,The Hall effect, The magnetic force on a current, The Biot Savart law, Line of B, Two parallel conductors, Amperes' s Law, Solenoid, Toroids, Faraday's experiments, Faraday's Law of Induction. Lenz's law, Motional emf, Induced electric field, Induced electric fields, The basic equation of electromagnetism, induced Magnetic field, The displacement current.

Course Outcomes:

Students will master essential electromagnetism and DC circuit concepts for practical applications.

- Grasp electric charge and fields.
- Apply Coulomb's Law effectively.
- Calculate potential for charges.
- Understand equipotential surfaces.
- Differential form the Maxwell's equations

Recommended Books:

1. Halliday, D., Resnick, R., & Walker, J. (2013). Fundamentals of physics: John Wiley & Sons.

2. Halliday, D., Resnick, R., & Krane, K. S. (2010). Physics, Volume 2: John Wiley & Sons.

3. Serway, R. A., & Jewett, J. W. (2018). Physics for scientists and engineers: Cengage learning.

4. Young, H. D., Freedman, R. A., & Ford, A. L. (2014). University physics with modern physics: Pearson New York.

5. Young, H. D., Freedman, R. A., & Ford, A. L. (2014). University physics with modern physics: Pearson New York.

Course Name: Waves and Oscillation	**Course Code:** PHY-411
Course Structure: Lectures: 3	**Credit Hours:** 03
Prerequisites: Mechanics, Multivariate Calculus-I/ None	

Course Objectives:

This course mainly focusses on types of motion specifically oscillatory motion and its examples. Students will also learn about different types of waves and they will learn to derive wave equation.

Course Outline:

Simple and Damped Simple Harmonic Oscillation: Mass-Spring System, Simple Harmonic Oscillator Equation, Complex Number Notation, LC Circuit, Simple Pendulum, Quality Factor, LCR Circuit.