North South University
Department of Mathematics and Physics
Spring, 2023.

Course Number and Title:	**PHY108 Section: 4, General Physics-II**
Credits:	3 SCH
Course type:	Required, GED, Lecture
Course Prerequisites:	PHY107, MAT 130.
Course Schedule/Timing:	Lecture – 2 Hours/Week. MW 4:10 PM - 5:10 PM
Instructor(s)-in-charge:	Zasim Mozumder Office: SAC 1048, Phone: 55608200 Ext. 1522 Email: zasim.mozumder@northsouth.edu
Facebook:	Physics108Spring23
Course Assessment:	Homework/Assignment:10 Quizzes – 10, Midterm -1, Final-1
Grading policy:	Attendance- 5%, Assigments-15%, Quiz –15%, Midterm-30%, Final – 35%
Class Room:	SAC 315
Office Hours:	ST/MW 5:10 PM - 6:10 PM and you may make an appointment to see me at different time.

Catalog Description:

Electric Charge, Coulomb's Law. The Electric Field: Electric Field Lines, The Electric Field Lines Due to a Point Charge, The Electric Field Lines Due to an Electric Dipole, The Electric Field Lines Due to a Line of Charge, The Electric Field Lines Due to a Charged Disk. Gauss Law: Gauss's Law in Cylindrical, Planar and Spherical Symmetries. Electric Potential: Equipotential Surfaces, Potential Due to an Electric Dipole. Capacitance: Capacitors in Parallel and Series, Capacitors with a Dielectric. Electric Current, Current Density, Resistance and Resistivity, Ohm's Law. Circuits, Work, Energy and EMF, Single Loop Circuits, Potential Differences, Multiloop Circuits, RC Circuits. The Magnetic Field, Ampere's Law, Solenoids and Torroids, Faraday's Law of Induction, Alternating Currents, Maxwell's Equations.

Text: Fundamentals of Physics, David Halliday, Robert Resnick, Jearl Walker, 9th Edition, John Wiley & Sons.

Course Objective

Upon completion of this course the student will be able to:

1. Understand the fundamental properties of the electric charge, solve problems associated with the electrostatic force, the electric force field, Gauss's Law, the electric potential and potential difference using calculus.

2. Define electric capacitance and solve problems with capacitors of various symmetries, the effect of dielectric materials on capacitance and stored energy.

3. Define electric current, current density, and solve technical problems involving

networks of resistors, batteries, and capacitors, Ohm's Law, Kirchhoff's Laws, and RC charging and discharging circuits.

4. Understanding of the magnetic field and magnetic flux, solve problems with the effect of static, uniform magnetic fields.

5. Calculate the magnetic field for symmetric current distributions using the Law of Biot-Savart and Ampere's Law

6. Faraday's Law of Induction with Lenz's Law and to solve technical problems associated with induction.

7. Calculate inductance, solve technical problems associated with LR circuits and coils, and calculate the stored energy in magnetic fields.

8. Solve problems involving electromagnetic oscillations and AC, LC oscillators, LRC circuits

9. Basic understanding of the four Maxwell's equations