CSC1204 Physics

COURSE INFORMATION SHEET

PROGRAMME: **Software Engineering**	DEGREE: **B.S**
COURSE: **Physics**	SEMESTER**: I** CREDITS:**3+1**
COURSE CODE: **CSC1204**	COURSE TYPE: **CORE**
COURSE AREA/DOMAIN: **Computer Science**	CONTACT HOURS: **3 hours/week.**
CORRESPONDING LAB COURSECODE(IFANY): **Nil**	LAB COURSE NAME: **Physics Lab**

Course Objectives

The objective of this course is to provide the basic concepts of current, voltage, electromagnetic induction and light. These concepts are useful to understand the functionality of Computer Hardware.

Course Description

The topics covered in this course include charge, current, resistance, Columbs Law of electrostatic charges, Electric Field due to various distribution of charges, Gauss Law, Electric Potential due to various distribution of charges, Amperes Law, Faradays Law, Lenz's Law Electromagnetism, Laws of Reflection and Refraction, Interference, Diffraction and Polarization of light waves.

SYLLABUS:

Week	Topics
1.	Introduction to Physics, Nature of Physics. Electric Charge, Conductors, Insulators.

2.	Columb's Law of Electrostatic Charges, Conservation of Charge, Charge quantization.
3.	The Electric Field. The Electric fields due to a Charged Particle. The Electric Field due to a Dipole.
4.	The Electric fields due to a Line of Charge. The Electric Field due to a Charged Disk.
5.	A Point Charge in an electric field, A Dipole in an electric field,
6.	The Electric fields due to a Charged Particle. The Electric Field due to a Dipole.
7.	Electric Flux, Gauss Law, A charge isolated conductor. Applications of Gauss' Law, Spherically symmetry.
8.	Electric potential, Equapotential Surfaces, Potential due to a Charged Particle.
9.	Potential due to a Dipole, Electric potential energy of a System of Charged Particles.
10.	Electric current, Current density, Resistance, Resistivity and conductivity.
11.	Ohm's law and its applications, The Hall effect, The magnetic force on a current, Amperes's Law, Solenoid, Toroids.
12.	Faraday's experiments, Faraday's Law of Induction. Lenz's law, Motional emf, Induced electric field, Induced electric fields, The basic equation of electromagnetism.
13.	Reflection and Refraction of light waves, Total internal reflection, Two source interference.
14.	Diffraction and the wave theory, related problems, Single-Slit Diffraction, related problems.
15.	Polarization of electromagnetic waves, Polarizing sheets, related problems.

TEXT/REFERENCE BOOKS:

Fundamentals of Physics (Extended), Resnick and Walker , 10th Edition.
University Physics with Modern Physics, 13th Edition, Young, Freedman

COURSE LEATNING OUTCOMES (CLOs):

CLO	Description	Domain	BT Level*
LO1	Understanding basic principles Charge, Electric Field, Electric Flux	Cognitive	2
LO2	Describe the Electric Potential, Amper's Law, Faradays Laws of Electromagnetic Induction	Cognitive	2
LO3	Illustrate Optics Laws, Diffraction and Interference phenomenon.	Cognitive	3

MAPPING COURSE LEARNING OUTCOMES (CLOs) AND PROGRAM LEARNING OUTCOMES (PLOs)

	PROGRAM LEARNING OUTCOMES (PLOs)										
	a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
CLO.1	x										
CLO.2	x										
CLO.3	x										

PROGRAM LEATNING OUTCOMES (PLOs):

PLO	DESCRIPTION
a	The ability to utilize logic, mathematics and physical sciences to model and solve Computer Science problems.
c	The ability to think critically, perform scientific analysis and develop solutions for typical Computer Science problems.