

PH-9151 Physics Lab-II (Atomic & Nuclear Physics and Microwaves)

L	T	P	C
0	0	8	4

Course Outcomes:

After successful completion of the course, the students should be able to

CO1: Verify the theoretical formulations/ concepts of physics.

CO2: Know the art of recording the observations of an experiment scientifically.

CO3: Learn by doing.

CO4: Handle and operate the various elements/parts of an experiment.

CO5: Understand the importance of physics experiments in engineering & technology.

CO/PO Mapping												
S-strong, M-medium and W-weak indicate the strength of correlation												
COs	Programme outcomes (POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	W	W	W		W		M	S	S	S	S
CO2	W	S	S	M	S	W	M	W	M	W		M
CO3	M	W	S	S	W	S	S	S	S	M	S	S
CO4	S	S	M	M	M	M	M		M	S	M	W
CO5	M	S	S	W	S	M	M	M			W	W

PH-9151 Physics Lab-II (Atomic & Nuclear Physics and Microwaves)

L	T	P	C
0	0	8	4

List of Practical:

Atomic and nuclear Physics:

- Study of photoelectric effect using photocell:
 - To plot the current-voltage characteristics of a given photocell at constant irradiance
 - To measure the photo-current as a function of irradiance at a constant voltage.
 - To determine Planck's constant
 - to verify the inverse square law
- To determine the e/m ratio by
 - Millikon's oil drop method
 - Zeeman splitting of the green mercury line using Fabry-Perot etalon.
- To setup ESR spectrometer and to determine the g -factor of electron using sample of DPPH.
- To investigate the nuclear spin resonance in Glycerine, Polystyrene and Teflon with NMR spectrometer
- To determine the absorption coefficient of gamma-rays in given material using NaI(Tl) detector.
- To determine the absorption coefficient of beta particles in aluminum using GM counter
- To study: (a) X-rays produced by X-ray tube (b) absorption of copper K X-rays in Al by varying the thickness of Al targets.
- (a) to determine the Planck's constant and (b) to verify Moseley's law using X-ray apparatus.
- To find absorption coefficient of Copper K X-rays in V, Cr, Mn, Fe, Co, Ni, Cu and Zn.
- To study the diffraction spectrum of Copper K X-rays diffracted from given single crystal.
- To study the diffraction spectrum of Copper K X-rays diffracted from given crystalline powder.

Microwaves:

- To find the wavelength of microwaves using Klystron-tube based X-band microwave-bench working in TE_{10} mode and also to determine the VSWR at different loads.
- To determine the dielectric constant of given liquid at X-band frequency using Von-Hippel's method.
- To study Gunn oscillator as a source of microwaves and to find the wavelength of microwaves.
- To set up the X-band resonator cavity and use it to determine the dielectric constant of given material.

Practicals: 96 Hrs

Total: 96 Hrs

c/BOS
minj

Head
Department of Physics
Sant Longowal Inst of Engg. & Tech.
LONGOWAL (Sangrur)