KU6SECPHY103: Maintenance of Electro-Optical Devices

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
VI	SEC	100	KU6SECPHY103	3	45

Learning Approach (Hours/ Week)		Marks Distribution			Duration of ESE (Hours)
Lecture+ Tutorial	Practical	CE	ESE	Total	
3	0	25	50	75	1.5

Course description:

This course aims to develop experience of working with a wide range of laboratory equipments and learn how to test, check faults, and use laboratory equipment.

Course Prerequisite: NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Understand the working of various laboratory electrical, electronic, and optical instruments	*U*
2	Identify the fault of electrical devices	*U*
3	Identify fault and do maintenance of electrical-electronic devices	*A*

4	To check the calibration of Oscilloscope & DSO and other electrical equipment. Do the checking and maintenance of equipment.	*An, A*

Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)

Mapping of Course Outcomes to PSOs

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**	**PSO 7**
CO 1	3	3	3	3	3	2	1
CO 2	1	3	3	2	3	2	1
CO 3	1	3	3	2	3	2	1
CO 4	2	3	3	3	3	2	2
CO 5	1	1	1	1	1	3	3

Correlation level 0-None, 1-Slight, 2-Medium, 3-High

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	**UNIT**	**DESCRIPTION**	**HOURS**
1	**Calibration & Testing of Equipment**		**6**
	1	Introduction	1
	2	Calibration of equipments	2
	3	Method of testing and maintenance	2
	4	Different kinds of faults of laboratory equipments	1

2	**Electrical components and measuring devices**		**8**
	1	Checking of Switches, cables and connectors	2
	2	Testing of batteries and fuses, switch box, dual power supply	2
	3	Testing of Measuring devices - Voltmeter, ammeter, galvanometer	2
	4	Testing of multimeter and its various uses	2
3	**Testing of electrical and electronic devices**		**10**
	1	Testing of transformers, inductors, capacitors and resistors	2
	2	Identification of resistors, IC	2
	3	Use of multimeter to check resistance box, resistors	3
	4	Checking of diode, transistor, Zener diode, fuse	3
4	**Calibration and maintenance of electrical, electronic and optical instruments**		**12**
	1	Calibrating and testing cathode ray oscilloscope, digital storage oscilloscope, function generator, potentiometer	3
	2	Maintenance of Spectrometer, telescope, travelling microscope, beam balance, lasers, sodium vapour lamp, mercury vapour lamp, grating	3
	3	Checking and maintenance of Meldey's apparatus, ballistic galvanometer, tangent galvanometer	4
	4	Checking and maintenance of compass box, vibration magnetometer, deflection magnetometer, flywheel, Carey Foster's Bridge	2
5	**Teacher Specific Module**		**9**
	Directions		
	Testing of transformers, inductors, capacitors and resistors; Checking of diode and transistors, calibrating and testing CRO and DSO, function generator.		

Essential Readings:

1. Electronic and Electrical Servicing: Consumer and Commercial Electronics, Second Edn, Ian Sinclair and John Dunton, 2007.
2. Troubleshooting Electronic Equipment: Includes Repair And Maintenance, Second Edn: Dr R.S. Khandpur, 2006.

3. Troubleshooting and Repairing Consumer Electronics Without a Schematic, 3rd Edn, Homer L. Davidson, 2004.
4. How to Diagnose and Fix Everything Electronic, Second Edn, Michael Geier, 2011.

Assessment Rubrics:

Evaluation Type		Marks
End Semester Evaluation		**70**
Continuous Evaluation		**30**
a)	*Test Paper	10
c)	**Assignment/ Book- Article Review	10
d)	Seminar/ Viva -Voce	10
Total		**100**

*Best out of two test papers

** or any other activities like quiz, open book exam, group activity