Semester Lecture Plan

Name of the college: Government College of Arts, Science & Commerce, Sanquelim-Goa

Name of Faculty: Aga D. A.	**Subject:** Physics	
Paper code:PHY-144 PCB designing	**Program/Course: F.Y. B.Sc.**	**Division: A**
Academic year: 2023 - 2024	**Semester: I**	**Total Lectures: 15**

Course Objectives: This course aims to provide the students with a foundation in basic designing of PCB. Designing

Course Learning Outcome: The student after undergoing this course will be able to: 1. Describe and explain working of active and passive components checking of active and passive components etc.2.Explain and design various circuits like amplifier, oscillator etc. 3.Describe and Explain various types of transducers. 4. Describe and explain PCB designing like front panel, back pael, painting , etching etc.

Month	Lectures From:	To:	No. of lectures allotted	Topic, Subtopic to be covered	Learning outcome	ICT Tools	Reference books
December 24	09/12/2024	14/012/2024	01	Introduction: Practical acquaintance with techniques for measurement and use of necessary tools and instruments such as	**The student will be able to: 1. Describe and explain active and passive componenets, designing of**	White board and marker	1.Allen Mottershed, Electronic Devices and Circuits An Introduction: PHI (1997). 2.Malvino, Electronic

				CRO,	**various circuits**		Principles, TMH (2007). 3.J. Millman and C. Halkias, Electronic Devices and Circuits , Mc Graw Hill (1972).
December 24	09/12/2024	14/012/2024	01	Signal generator, Multimeter, Power supply	**The student will be able to:** **1. Describe and explain power supply and study signal generator.**	White board and marker	1.Allen Mottershed, Electronic Devices and Circuits An Introduction: PHI (1997). 2.Malvino, Electronic Principles, TMH (2007). 3.J. Millman and C. Halkias, Electronic Devices and Circuits , Mc Graw Hill (1972).
Dec-24	16/12/2024	18/12/2024	01	PCB components: Exposure to different types of components: diodes, resistors, capacitors, transistors,	**The student will be able to:** **1) Describe and explain PCB Designing and various components**	White board and marker	1.Allen Mottershed, Electronic Devices and Circuits An Introduction: PHI (1997).

							2.Malvino, Electronic Principles, TMH (2007). 3J. Millman and C. Halkias, Electronic Devices and Circuits , Mc Graw Hill (1972).
Jan-25	02/01/2025	04/01/2025	01	operational amplifiers, field effect transistors, unijunction transistor and testing of various component	**The student will be able to:** **1. explain opamp, FETs**	White board and marker	1. Allen Mottershed, Electronic Devices and Circuits An Introduction: PHI (1997). 2. Malvino, Electronic Principles, TMH (2007). 3. J. Millman and C. Halkias, Electronic Devices and Circuits , Mc Graw Hill (1972).
Jan-25	06/01/2025	11/01/2025	01	Breadboard theory: Circuit implementation using breadboards, soldering	**The student will be able to:** **Design PCB using Breadboard**		1.Allen Mottershed, Electronic Devices and Circuits An Introduction: PHI (1997). 2.Malvino, Electronic Principles, TMH (2007).

							3.J. Millman and C. Halkias, Electronic Devices and Circuits , Mc Graw Hill (1972).
	13/01/2025	16/01/2025	01	de-soldering techniques, construction of circuits using Vero boards	**The student will be able to: . solder components**		1.Allen Mottershed, Electronic Devices and Circuits An Introduction: PHI (1997). 2.Malvino, Electronic Principles, TMH (2007). J. Millman and C. Halkias, Electronic Devices and Circuits , Mc Graw Hill (1972).
	20/01/2025	25/01/2025	01	PCB designing: Need for PCB design, various types of PCB designs such as single and multilayer	**The student will be able to: Explain and design various instruments using PCB**	White board and marker	H. S. Kalsi, Electronic Instrumentation: TMH (2004).
Jan-Feb 2025	27/01/2025	01/02/2025	01	PCB material.	**The student will be able to: Explain and design various instruments using PCB**	White board and marker	H. S. Kalsi, Electronic Instrumentation: TMH (2004).
Feb-25	03/02/2025	08/02/2025	01	Schematic designing: Introduction to schematic design, understanding various symbols and	**The student will be able to: Explain and design various instruments**	White board and marker	H. S. Kalsi, Electronic Instrumentation: TMH (2004).

				their respective functions, circuit designing,	**using PCB and circuit designing**		
	10/02/2025	15/02/2025	01	tracing and artwork on copper clad boards, technique of etching on copper clad boards	**The student will be able to: trace artwork on copper clad .**	White board and marker	1. H. S. Kalsi, Electronic Instrumentation: TMH (2004).
	17/02/2025	22/02/2025	01	PCB layout design: PCB layout design process, layout and rules, cleaning of PCB, PCB drilling,	**The student will be able to: design PCB Layout**	White board and marker	H. S. Kalsi, Electronic Instrumentation: TMH (2004).
Feb-march-25	24/02/2025	01/03/2025	01	mounting/placement of components, soldering and testing of PCB circuit.	**The student will be able to: solder and test PCB circuit**	White board and marker	H. S. Kalsi, Electronic Instrumentation: TMH (2004).
March-25	03/03/25	08/03/25	01	Introduction to PCB design software (Opensource software)	**The student will be able to: Explain PCB design software**	White board and marker	H. S. Kalsi, Electronic Instrumentation: TMH (2004).
	10/03/25	15/03/25	01	Create circuit board layouts with any software such as: FreePCB, DesignSpark PCB,	**The student will be able to: circuit board layouts**	White board and marker	H. S. Kalsi, Electronic Instrumentation: TMH (2004).
	17/03/25	22/03/25	01	Osmond PCB, Express PCB, KiCad (multi-platform PCB design package), ZenitPCB, EasyEDA, etc	**The student will be able to: Explain express PCB and other software**	White board and marker	H. S. Kalsi, Electronic Instrumentation: TMH (2004).
	24/03/25	29/03/25	01	Revision	----------	White board and marker	----------

March-25-April-25	31/03/25	05/04/25	04	Revision	----------	White board and marker	----------

*Note: Data filled in the above form is sample data.