Lecture Plan		
Name of the college: Govt College of Arts Science and commerce Sanquelim Goa		
Name of Faculty: Suvarna G Patil	**Subject:** Physics	
Paper code: PHY141	**Program: FY BSc**	**Division: A**
Academic year: 2025- 2026	**Semester: II**	**Total Lectures: 15L+60p**
Course Objectives: To have basic understanding of Physics	**The course will prepare the student/s to develop skills of the design and implementation of electronic circuits and fabricate the same using PCB designing for a prototype and/or circuit production in Electronic Industry.**	
Expected Course Outcome:Understand Physics at basic level	**1. Develop the necessary skills in drawing circuit diagrams and use techniques of circuit analysis for designing a given circuit as per given specifications. 2. Use a Breadboard for a prototype implementation of circuits, test**	

				the performance of the circuit design using testing and measuring instruments (Multimeter, CRO, power supply etc). 3. Develop soldering and de-soldering techniques and develop the necessary skills in etching PCB's. 4. Create and fabricate a PCB, construct and test the circuit design on PCB's.			
Student Learning Outcome: Understandng basic physics more deeply							
Month	**Lecture From**	**Lecture To**	**No. of lectures allotted**	**Topic, Subtopic to be covered**	**Exercise/ Assignment**	**ICT Tools**	**Reference books**
Dcember	01/12/2025	6/12/2025	4	Introduction: Practical acquaintance with techniques for measurement **Practical:Practical acquaintance with instrumental techniques for measurement: CRO, Signal generator, Multimeter**		PPT	Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005
	8/12/2025	13/12/2025	4	use of necessary tools and instruments such as CRO, Signal		PPT	Charles A. Harper: Handbook of Electronics

				generator, Multimeter, Power supply. **Practical- Testing of various components: Resistors, capacitors, transistors, diodes, FET, UJT etc.**			Packaging, Tata McGraw Hill, 2005
	15/12/2025	20/12/2025	4	**Funweek Election Duty**			
	22/12/2025	23/12/2025		Christmas Break			
	24/12202 5	1/01/2026		PCB components: Exposure to different types of components: diodes, resistors, capacitors, transistors, operational amplifiers, **Practical- Constructing a given circuit using a breadboard and**	PPT	PPT	Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005

				testing the same for the required output/s.Practical- Circuit designing, tracing and Artwork on Copper Clad board or circuit board layouts using opensource software.			
January	02/1/2026	3/01/2026		**.**			
	5/01/2026	10/01/2026		f ield effect transistors, unijunction transistor and testing of various components. **Practical- Soldering and de-soldering technique, constructing circuits using vero boards.**	PPT	PPT	Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005
	12/01/2026	17/01/2026		Breadboard theory: Circuit implementation using breadboards, soldering de-soldering techniques, construction of circuits using Vero boards. **Practical- Etching of copper clad boards using ferric chloride and commonly used precautions to be taken**		PPT	Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005
	19/01/2026	24/01/2026		PCB designing: Need for PCB design, various types of PCB designs such as single and multilayer, PCB material.		PPT	Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005

				Practical- Cleaning of PCB, PCB drilling, mounting of components.			
	26/01/2026	31/01/2026		PCB layout design: PCB layout design process, layout and rules, cleaning of PCB, PCB drilling, **Practical-Revision**			Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005
Februvary	02/02/2026	07/02/2026		Schematic designing: Introduction to schematic design, understanding various symbols and their respective functions, **Practical- Soldering and testing of designed circuits on PCB.**			Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005
	09/02/2026	14/02/2026		Introduction to PCB design software (Opensource software) Create circuit board layouts with any software such as: FreePCB, **Practical-Revision**		PPT	Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005
	16/02/2026	21/02/2026		circuit designing, tracing and artwork on copper clad boards, technique of etching on copper clad boards. **Practical-Revision**		PPT	Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005

				Practical			
	23/02/2026	28/02/2026		mounting/placement of components, soldering and testing of PCB circuit. **Practical-Revision**		PPT	Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005
March	02/03/2026	07/03/2026		DesignSpark PCB, Osmond PCB, Express PCB, KiCad (multi platform PCB design package), ZenitPCB, EasyEDA, etc. **Practical-Revision**			Charles A. Harper: Handbook of Electronics Packaging, Tata McGraw Hill, 2005
	09/03/2026	14/03/2026		Revision			
	16/03/2026	21/03/2026		Revision			
	23/03/2026	28/03/2026		Revision			
	30/03/26	31/03/2026		Revision			

*** Assessment Rubrics**

Component	Max Marks
ISA 1	5
ISA 2	5
ISA 3	5
Semester End Exam	20