Ch. Ranbir Singh University, Jind
Undergraduate Programs
Course: SEC-2

Session 2024-25			
Part A - Introduction			
Subject	Physics		
Semester	2nd		
Name of the Course	Physics Laboratory Skill Enhancement		
Course Code	24PHY-SEC-227		
Course Type: (CC/MCC/MDC/CC-M/ DSEC /VOC/DSE/PC/AEC/VAC)	SEC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (ifany)	NA		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Learning measuring devices like Vernier callipers, Screw gauge, spherometer, micro-meter, travelling microscope and Sextant for measuring various length scales. 2. Developing mechanical skill such as casting, foundry, machining, forming and welding and will become familiar with common machine tools like lathe, shaper, drilling, milling, surface machines and Cutting tools. 3. Acquiring optical skills that will be helpful in healthcare and automobiles. 4. Obtain skills in the usage of multi-meters and electric measuring devices, soldering of electrical circuits, oscilloscopes, power supplies and relays. 5. Learn to present observations, results, analysis and different concepts related to Physics Laboratory Skill		
Credits	Theory	Practical	Total
	0	3	3
Contact Hours	0	6	6

Max. Marks:75 **Internal Assessment Marks:25** **End Term Exam Marks:50**		**Time:3 hrs**
Part B-Contents of the Course		
		Contact Hours
	Practicum 1. Comparison of diameter using screw gauge & vernier calliper. 2. To find the height/area of a distant object using sextant. 3. To find radius of curvature of a curved surface using spherometer. 4. To identify various parts of a spectrometer & to find the least count of a spectrometer. 5. To find the power of a concave/convex mirror. 6. To find the power of a concave/convex lens. 7. To find the resolving power of a telescope. 8. To study the V-I characteristic of a resistor. 9. To study V-I characteristic of a diode. 10. To study voltage regulation characteristics for a Zener Diode. 11. To study & design a regulated power supply. 12. Study of current and voltage in a series circuits & parallel circuits. 13. Measurement of electrical conductivity of different materials. 14. Study of Faraday's Law of Electromagnetic Induction & to verify. 15. Measuring voltage and current in household circuits & identifying and troubleshooting common electrical faults. 16. Understanding the operation of circuit breakers and fuses& make a fuses of different loads. 17. Exploring the efficiency of different types of light bulbs like LED & incandescent bulb. 18. Analyzing the effect of voltage drops across household wiring by comparing the copper wires of different thickness. 19. Refraction: Investigate the refraction of light through different transparent materials& to verify Snell's law. 20. Observe & compare interference/diffraction patterns using a single slit & double-slit experiment. 21. Investigate the polarization of light using polarizing filters. 22. Practice soldering components onto a PCB (Printed Circuit Board)& make a basic circuit. 23. Simple Alarm System: Build a basic circuit with a buzzer and a switch to create a simple alarm system. 24. Automatic Night Light: Design a circuit that turns on an LED automatically when it gets dark. 25. Water Level Indicator: Construct a circuit that indicates the water level in a tank using sensors. 26. Light-Activated Switch: Develop a circuit where an LED turns on when exposed to light using a light-dependent resistor (LDR).	90

	Note: Student will perform at least Fifteen experiments. The examiner will allot two practical at the time of end term examination.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Practicum (25 Marks)** • Class Participation:**10** • Seminar/Demonstration/Viva-voce/Lab records etc.: 1**5 Marks** • Mid-Term Exam: **Nil**		**End Term Examination : 50 Marks**
PartC-Learning Resources		
Recommended Books/e-resources/LMS: **1.** A text book in Electrical Technology - B L Theraja, S. Chand and Company. **2.** Performance and design of AC machines M.G. Say, ELBS Edn. **3.** Mechanical workshop practice, K.C. John, 2010, PHI Learning Pvt. Ltd. **4.** Optical Physics, A. Lipson, S.G. Lipson, H. Lipson, 4th Edn., 1996, Cambridge Univ. Press **5.** Workshop Processes, Practices and Materials, Bruce J Black 2005, 3rd Edn., Editor Newnes [ISBN: 0750660732] **6.** New Engineering Technology, Lawrence Smyth/Liam Hennessy, The Educational Company of Ireland [ISBN0861674480].		