

Branch Name:	Physics
Program Code:	SC105
Course Name:	Instruments - II
Course Code:	2SC1050621
Pre-requisite Course:	Basic knowledge of Instruments.

Course Objectives:

1. To develop an actual understanding of Cathode Ray Oscillator.
2. To know the basic concept of G M Counter.
3. To understand the use of Optical Instruments.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	--	--	2	35	15	--	--	50

Subject Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	Introduction, Attenuation of light in optical medium, Thermal Equilibrium, Interaction of light with matter, Einstein relations, Light amplification, Population inversion, Active medium, Pumping, Metastable states, Principal pumping schemes, optical resonant cavity, Axial modes, Gain curve and laser operating frequencies, Transverse modes, Types of Lasers, Rubby Lasers, Helium-Neon Laser, Applications.	12	50
2	(a) C.R.O. CR Tube, Electrostatic Deflection Sensitivity, Magnetic Deflection Sensitivity, CRT connections, Uses of C.R.O. (b) G. M. Counter Principle, Construction, Working, Dead time, recovery time, True counting rate, Efficiency of counting, Quenching of G M counter, Operation and testing of G.M. counter, Plateau, Applications of GMC, Advantages and limitations of GMC.	12	50

Reference Books:

1. A textbook of Optics by Dr.N.Subrahmanyam, Brijlal and Dr.M.N. Avadhanulu, S. Chand & Co. (for M.I and B.C.)
2. Hand Book of Electronics by Gupta and Kumar. 30th revised Edition 2002. (For CRO)
3. Refresher Course in Physics Vol-III, S. Chand & Co. Ltd. (7th edition-2006) (for GMC, Ch-28)

List of Open Source Software/learning website:

1. https://www.youtube.com/watch?v=il_VDR3f57s
2. <https://www.youtube.com/watch?v=cIxICyBV2Ic>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Describe the Equilibrium in Laser Concept.	1 Remembering
CLO2	Discuss the Principle, Construction and Working of Laser	2 Understanding
CLO3	Solve the problems based on setting of instruments in laboratory.	3 Applying
CLO4	Explain Cathode ray Oscillator.	4 Analyzing
CLO5	Justify the use of G M Counter in nuclear field	5 Evaluating
CLO6	Design a grating by using of Light.	6 creating

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Programme Outcomes (POs)									Programme Specific Outcome (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CLO1	L									H	
CLO2			H				H				
CLO3					H					M	
CLO4								M			
CLO5		M								H	
CLO6									M		

H: High, M: Medium, L: Low