SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25)
Syllabus with effect from the Academic Year 2021-2022

Master of Science – Nano Science & Nano Technology
(M.Sc.) (Nano Science & Nano Technology) Semester –I

Course Code	PS01CNST55	Title of the Course	PRACTICAL – I
Total Credits of the Course	4	Hours per Week	12 hrs

Course Objectives:	1. To have hand on practice of different vacuum related instruments in the laboratory

Course Content		
Unit	Description	Weightage* (%)
1.	➢ Operation of vacuum coating unit. ➢ Deposition of metallic thin film using vacuum coating unit. ➢ Determination of specific heat of graphite at different temperatures ➢ Estimation of thickness of film by multiple beam interferometry method. ➢ Preparation of thin film resistor using vacuum coating unit. ➢ Estimation of inter planar spacing and unit cell dimensions using electron diffraction pattern. ➢ Determination of electrical conductivity of graphite at room temperatures. ➢ Determination of depth of scratch by MBI method.	100%

Teaching-Learning Methodology	Demonstration/Group discussion/ Panel/Hands on training

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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Operate different vacuum pumps and get familiar with related instruments
2.	Get familiar with optical methods used for film thickness measurements

Suggested References:	
Sr. No.	References
1.	Vacuum Science and Technoligy- V.V. Rao, T.B. Ghosh and K.L.Chopra
2.	Handbook of Thin films – Maissel and Glang
3.	
4.	

On-line resources to be used if available as reference material
On-line Resources

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