

GUJARAT TECHNOLOGICAL UNIVERSITY

BRANCH NAME: NANOTECHNOLOGY

SUBJECT NAME: PROJECT-I (SYNTHESIS OF NANOMATERIALS)

SUBJECT CODE: 2170001

B.E. 7th SEMESTER

Type of course: Nanoscience and Nanotechnology

Prerequisite: knowledge of Chemistry, Physics, synthesis of nanomaterials-I and II as well as characterization of nanomaterial- I and II

Rationale: This course will give hands on experience on synthesis techniques of nanomaterials and use of standard analytical tools for materials' property evaluation.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P		Theory Marks			Practical Marks			
			ESE (E)	PA (M)		PA (V)		PA (I)		
				PA	ALA	ESE	OEP			
0	0	8	8	0	0	0	0	100	50	150

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment; OEP-Open Ended problem; AL-Active learning;

This course aims at giving students hands-on experience and synthesis lab practice on solution-based chemical fabrication techniques for nanomaterials. Students will choose a topic from the available list of projects given by project guide or their choice. This project begins with a comprehensive literature search on the fabrication and characterization of the selected material by conventional routes and advantages vs. disadvantages of the used methodologies: to be presented in the form of a written report.

Course Outcome:

After a successful completion of the course, students should be able to:

Perform an extensive literature survey on the synthesis topic/material of choice.

- Prepare a detailed report on the topic of synthesis/material.
- Design their synthesis experiments for the targeted material of choice.
- Explain the underlying chemical and physical principles of the selected/designed synthesis scheme.
- Perform chemical stoichiometric calculation for the preparation of solutions.
- Interpret and do analysis of XRD /TGA Thermogram/ FTIR /UV-Vis data and plots