



# GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering

Subject Code: 3736102

Semester – III

Subject Name: Nano materials and Nanotechnology

Type of course: Major Elective V

Prerequisite: NA

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE(E)	PA (M)	PA (V)	PA (I)		
3	0	0	3	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1	Nanomaterials in one and higher dimensions	
2	Applications of one and higher dimension nano-materials	
3	Nano-lithography, micro electro-mechanical system (MEMS) and nano-phonics	
4	Carbon nanotubes – synthesis and applications	
5	Interdisciplinary arena of nanotechnology	

Reference Books:

1. Nanoscale Materials in Chemistry edited by Kenneth J. Klabunde and Ryan M. Richards, 2ndedn, John Wiley and Sons, 2009.
2. Nanocrystalline Materials by A I Gusev and A ARempel, Cambridge International Science Publishing, 1st Indian edition by Viva Books Pvt. Ltd. 2008
3. Springer Handbook of Nanotechnology by Bharat Bhushan, Springer, 3rdedn, 2010.
4. Carbon Nanotubes: Synthesis, Characterization and Applications by Kamal K. Kar, Research Publishing Services; 1stedn, 2011, ISBN-13: 978-9810863975



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## Course Outcome:

After learning the course the students should be able to:

Sr. No.	CO statement	Marks % weightage
CO-1	To understand the basic science behind the design and fabrication of nano scale systems	
CO-2	To understand and formulate new engineering solutions for current problems and competing technologies for future applications	
CO-3	To be able make inter disciplinary projects applicable to wide areas by clearing and fixing the boundaries in system development	
CO-4	To gather detailed knowledge of the operation of fabrication and characterisation devices to achieve precisely designed systems	