

COURSE STRUCTURE & SYLLABI
for
Integrated M.Tech. in Nanotechnology

COURSE STRUCTURE				
Five Years Integrated M. Tech. Nanotechnology				
SEMESTER –I				
CODE		SUBJECT	L-T-P	CREDIT
PHY 110020	Theory	Engineering Physics-I	3-1-0	4
MAT 110010		Mathematics-I	3-1-0	4
CHM 111031		Engineering Chemistry-I	3-1-0	4
ENG 110040		Communication English	2-1-0	3
EVS 110060		Environmental Studies	2-1-0	3
NAN 111120		Basic Electrical Engineering	2-1-0	3
PHY 112110	Practical	Physics Laboratory -I	0-0-2	2
CHM 112120		Chemistry Laboratory-I	0-0-2	2
NAN 112130		Basic Electrical Engineering Laboratory	0-0-2	2
SEMESTER –II				
CODE		SUBJECT	L-T-P	CREDIT
PHY 120020	Theory	Engineering Physics-II	3-1-0	4
MAT 120010		Engineering Mathematics-II	3-1-0	4
CHM 121030		Engineering Chemistry-I	3-1-0	4
ENG 110040		Communication English	2-1-0	3
EVS 110060		Environmental Studies	2-1-0	3
NAN 111120		Basic Electronics Engineering	2-1-0	3
COM 120040		Fundamentals of Computer and C programming	2-1-0	3
BIO 120060		Biology	2-1-0	3
PHY 122110	Practical	Physics Laboratory -II	0-0-2	2
CHM 122120		Chemistry Laboratory-II	0-0-2	2
NAN 122070		Basic Electronics Engineering Laboratory	0-0-2	2
NAN 12210		Workshop Practices	0-0-2	2
SEMESTER –III				
NAN 211140	Theory	Mathematics-III	3-1-0	4
NAN 211190		Introduction to Materials Science	3-1-0	4
NAN 111110		Engineering Mechanics	3-1-0	4
NAN 211180		Materials Thermodynamics	3-1-0	4
NAN 212130	Practical	Materials Characterization Laboratory	0-0-2	2
NAN 212120		Engineering Drawing	0-0-2	2
SEMESTER –IV				
CODE		SUBJECT	L-T-P	CREDIT
NAN 221030	Theory	Synthesis and Properties of Nanomaterials	3-1-0	4
NAN 221140		Mathematics IV	3-1-0	4
NAN221160		Crystallography and Crystal Structure	3-1-0	4
NAN 221190		Mechanical Properties of Materials		
LRM 210100		Disaster Management	3-1-0	4
NAN 222200	Practical	Nanomaterial Synthesis Laboratory	0-0-2	2

SEMESTER –V (ELECTIVE)				
CODE		SUBJECT	L-T-P	CREDIT
NAN315070	Theory Elective	Advanced Functional Materials and Devices	3-1-0	4
NAN315120		Concepts in Theoretical Physics	3-1-0	4
NAN315110		Characterization Techniques of Nanomaterials	3-1-0	4
		Nanotechnology for Energy Systems	3-1-0	4

SEMESTER –VI				
NAN 321120	Theory	Spectroscopic Techniques	3-1-0	4
NAN 321130		Modern Microscopic Techniques	3-1-0	4
NAN 315130		Diffraction Techniques	3-1-0	4
NAN 321180		Computational Nano science	3-1-0	4
NAN 322140	Practical	Structural Characterization laboratory	0-0-2	2
NAN 322050		Computational Nano science Laboratory	0-0-2	2

SEMESTER –VII				
NAN 321140	Theory	Nanomagnetism	3-1-0	4
NAN 411100		Nanoelectronics	3-1-0	4
NAN 321030		Surface and thin films	3-1-0	4
NAN 411050		Polymer Engineering	3-1-0	4
NAN 324070	Practical	Industrial project/Term paper and Seminar	0-0-4	4

SEMESTER –VIII				
NAN 321140	Theory	Nanocomposites	3-1-0	4
NAN 411100		Nanophotonics	3-1-0	4
NAN 321030		Nanotribology and Nanomechanics	3-1-0	4
NAN 411020		Engineering Economics and IPR	3-1-0	4
NAN 424070	Practical	Project and Seminar	0-0-4	4

SEMESTER –IX				
CODE		SUBJECT	L-T-P	CREDIT
NAN 512060		Project		15
NAN 514070		Dissertation-interim Evaluation		05
			Total	20

SEMESTER –X				
CODE		SUBJECT	L-T-P	CREDIT
NAN 522060		Project		15
NAN 524070		Dissertation- Evaluation		10
			Total	25

M. Tech. (2 yrs) Nanotechnology

Course Code	SEMESTER-I	L-T-P	credits
NAN -611010	Materials Science and Engineering	2-1-0	3
NAN -611020	Synthesis and Properties of Nanomaterials	2-1-0	3
NAN -611030	Surface and Thin Films	2-1-0	3
NAN -611040	Analytical Technique for Nanomaterials	2-1-0	3
NAN -611050	<i>Elective 1</i> Advanced Functional Materials and Devices (AFMD)	2-1-0	3
NAN -611060	<i>Elective 2</i> Nanobiotechnology	2-1-0	3
NAN -612010	Nanomaterial Synthesis Laboratory	0-0-2	2
NAN -612020	Characterization Laboratory of Nanomaterials	0-0-2	2
SEMESTER-II			
NAN- 621020	Nanoelectronics	2-1-0	3
NAN- 621010	Nanocomposite	2-1-0	3
NAN- 621070	Photonic materials and devices	2-1-0	3
NAN-621030	Nanomagnetism	2-1-0	3
NAN- 626060	<i>Elective 3</i> Nanotechnology for Energy Systems (NES)	2-1-0	3
NAN-626040	<i>Elective 4</i> Self Assembly and Molecular Engineering (SAME)	2-1-0	3
NAN -622010	Term Paper and Seminar	0-0-2	2
NAN- 622090	Computational Nanotechnology Laboratory	0-0-2	2
SEMESTER-III			
NAN - 714010	Project		10
NAN - 714020	Dissertation - Evaluation		15
SEMESTER -IV			
NAN - 724010	Project		10
NAN - 724020	Dissertation - Evaluation		15

PHD in NANOTECHNOLOGY

Course Code	Course Name	L-T-P	credits
NAN-911010	Research Methodology	2-1-0	3
NAN-911020	Nanotechnology for Energy Application	2-1-0	3
NAN-911030	Synthesis of Nanomaterials	2-1-0	3
NAN- 911040	Materials Science & Engineering	2-1-0	3
NAN-911050	Nanomagnetics	2-1-0	3
NAN-911060	Surface Thin Film	2-1-0	3

