M.Sc. NANOSCIENCE AND TECHNOLOGY

This is a two-year course in *Nanoscience and Technology* with a focus on applications in energy science such as Photovoltaics, Batteries, Supercapacitors, Hydrogen Storage and Carbon Capture. Considerable research over the past decade has shown that nanomaterials can play a significant role in the above applications through use of nanoparticles, thin films and composites and materials with nano and mesoporous architectures. The course provides a fundamental understanding of the processing and properties of such materials and the physics and chemistry behind use of such materials in device applications, and the physics of the devices themselves. There are subject core courses dealing with design of nanosystems, nanomaterials and their processing, properties and characterization, as well as on the applications of nanomaterials to energy generation, storage, remediation and catalysis. Each student will have a thesis requirement involving one full year of hands-on independent research.

CURRICULUM

First Semester

Course Code	Type	Course	LTP	Credits
19MA613	FC	Statistical Data Analysis	101	2
19NT601	FC	Introduction to Classical &QuantumMechanics	300	3
19NS621	SC	Science andProperties of Nanomaterials	300	3
19NT621	SC	Physics of Semiconductor Nanostructures	300	3
19NS622	SC	Nanomaterials Synthesis	300	3
19NT629	SC	Introduction to Solid State Phenomena at Nanoscale	300	3
19HU601	HU	Amrita Values Programme	100	1
19HU602	HU	Career Competency-I		P/F
19NS624	SC	Lab: Nanomaterials Lab-I	102	3
19NT622	SC	Lab: Optoelectronis Lab	002	2
		Total Credits		**23**

Second Semester

Course Code	Type	Course	LTP	Credits
19NT630	FC	Chemical Thermodynamics	300	3
19NS625	SC	Characterization of Nanomaterials	300	3
19NT623	SC	EnergyConversion Scienceat Nanoscale	300	3
19NT624	SC	Thin Film Science and Technology	300	3
19NT631	SC	Nanophotonics	300	3
19NT625	SC	EnergyStorageScience at Nanoscale	300	3
19HU603	HU	Career Competency-II	100	1
19NS629	SC	Lab: Nanomaterials Lab-II	102	3
19NT626	SC	Lab: Energy Devices Lab	002	2
		Total Credits		**24**

Third Semester

Course Code	Type	Course	LTP	Credits
19RM601	FC	Ethics in Research and Research Methodology	101	2
19NT627	SC	Introduction to Nanodevice Fabrication	300	3
19NT628	SC	Nanomaterials for Hydrogen Storage and Carbon Capture	300	3
19NT796	P	Dissertation		5
		Total Credits		**13**

Fourth Semester

CourseCode	Type	Course	LTP	Credits
19NT797	P	Dissertation		10
		Total Credits		**10**
		Overall Total Credits		**70**