

LIST OF OPEN ELECTIVES												
Autumn Semester (July-December)							Spring Semester (January-June)					
Course code	Course Name	Credit Structure					Course Code	Course Name	Credit Structure			
		L	T	P	C				L	T	P	C
MM 451	Instrumentation and Process Control	3	0	0	6		MM 417	Entrepreneurship in Matls.Sci & Engg.	2	1	0	6
MM 621	Advanced Physical and Mechanical Metallurgy	3	0	0	6		MM 477	Ceramic Processing Techniques	3	0	0	6
MM 630	Mineral Process Engineering	3	0	0	6		MM 6002	Principles and Applications of Ferroelectric and Piezoelectric Materials	3	0	0	6
MM 632	Surface Engineering	3	0	0	6		MM 6004	Machine Learning for Materials Engineering	1	2	0	6
MM 640	Modeling of Microstructural Evolution	2	1	0	6		MM 6101	Additive Manufacturing with Metals	2	1	0	6
MM 641	Numerical Methods in Materials Processing	3	0	0	6		MM 622	Advanced Concepts in Iron Making	3	0	0	6
MM 644	Mathematical methods of Materials Engineering	2	1	0	6		MM 624	Advanced Concepts in Steel Making	3	0	0	6
MM 651	Thermodynamics of Materials	3	0	0	6		MM 626	Thermomechanical Processing and Forming of Steel	3	0	0	6
MM 654	Advanced Composites	3	0	0	6		MM 638	Polymer Blends and Composites	3	0	0	6
MM 657	Design and Application of Engineering Materials	3	0	0	6		MM 642	Modeling of Metallurgical Processes	3	0	0	6
MM 658	Fracture Mechanics and Failure Analysis	3	0	0	6		MM 650	Protective Coatings	3	0	0	6
MM 659	Transport Phenomena	3	0	0	6		MM 652	Advanced Ceramics	3	0	0	6
MM 672	Solidification Processing	3	0	0	6		MM 655	Modeling and Analysis	3	0	0	6
MM 676	Superconductivity Materials & Applications	3	0	0	6		MM 656	Simulation and Optimization	3	0	0	6
MM 680	Welding Science and Technology	3	0	0	6		MM 668	Computational Methods for Metal Forming Analysis	3	0	0	6
MM 681	Plastic Deformation and Microstructure Evolution	3	0	0	6		MM 669	Mechanical Behaviour of Thin Films	3	0	0	6
MM 682	Grain Boundaries and Interfaces	3	0	0	6		MM 670	Powders and Sintered Products	3	0	0	6
MM 685	Electrical and Magnetic Materials	3	0	0	6		MM 674	Materials & Processes for Semiconductor Devices	3	0	0	6
MM 687	Surface Science and Engineering	3	0	0	6		MM 677	Diffusion and Kinetics	3	0	0	6
MM 709	Introduction to Surface Engineering of Engg.matls	3	0	0	6		MM 678	Magnetism and Magnetic Materials	3	0	0	6
MM 712	Advances in Design and Corrosion Control for Industries	3	0	0	6		MM 684	X-Ray Diff. and Electron Microscopy	3	0	0	6
MM 713	Aqueous Corrosion and its Control	3	0	0	6		MM 688	Non-Crystalline Materials	3	0	0	6
MM 717	Electrochemical Materials Science	3	0	0	6		MM 691	Topics in Phase Transformation	3	0	0	6
MM 719	Introduction to Ab-initio Methods in Materials Modeling	3	0	0	6		MM 695	High Temperature Corrosion	3	0	0	6
MM 720	Organic Semiconductors and Devices	3	0	0	6		MM 700	Electrochemical and Materials perspectives in energy storage	6	0	0	6
MM 722	Molecular Simulations for Materials Engineering	2	1	0	6		MM 706	Control of Erosion and Wear in Corrosive Environment	3	0	0	6
MM 724	Plasma Processing of Materials	3	0	0	6		MM 711	Materials for Corrosion Prevention at High Temperatures	3	0	0	6
MM 725	Tribology of Materials	3	0	0	6		MM 716	Nanomaterials for Advanced Electro-chemical Energy Storage and Conversion	3	0	0	6
MM 726	Corrosion Management and Modeling	3	0	0	6		MM 718	Laser Processing and Nanostructures	3	0	0	6
MM 741	Introduction to silicon manufacturing Technology	2	1	0	6		MM 721	Fatigue, Creep and Superplasticity	2	1	0	6
MM 745	Strengthening Mech. In crystalline solids	2	1	0	6		MM 723	Thermoelectric Materials	3	0	0	6
MM 747	First Principles approach to Materials Science	3	0	0	6		MM 727	Corrosion in Oil and Gas, refineries & petrochemical Industry	3	0	0	6
MM 748	Fatigue of Materials	3	0	0	6		MM 728	Topics in Corrosion Research	3	0	0	6
MM 751	Engineering Aspects of Desalination(Inst.Elect)	3	0	0	6		MM 739	Semiconductor Photoelectrochemistry and Photocatalysis	3	0	0	6
MM 755	Kinetics of High Temperature Processess	2	1	0	6		MM 740	Silicon Manufacturing Technology Laboratory	0	0	3	3
MM730	Topics in Mechanical Behaviour of Materials	3	0	0	6		MM 742	Science and tech. of electric furnace steel making	3	0	0	6
EE 665	IC Technology	3	0	0	6		MM 743	Multiferroic Materials : Fundamentals and Devices	3	0	0	6
ME 613	Finite Element Methods	3	0	0	6		MM 746	Concepts and Advanced Polymer Sci. &Engg.	3	0	0	6
							MM 749	Statistics and Probability for Materials Engineers	2	1	0	6
							MM 750	Vibrational Spectroscopy for Materials Scientists (Inst.Elect)	3	0	0	6
							MM 752	Experimental Mechanics of Materials	1	1	2	6
							MM 753	Micro-mechanics of Thin Films and Small Structures	2	1	0	6
							MM 754	Sustainable Materials for Water Treatment	3	0	0	6
							MM 756	Physical Metallurgy and Mechanical Properties of Steel	3	0	0	6
							MM 758	Science and Technology of Light Alloys and Superalloys	3	0	0	6
							MM 759	Structure and Defects	3	0	0	6
							CE 620	Finite Element Method	3	0	0	6
							CH 602	Characterization of Polymers	3	0	0	6
Note :Courses to be taken as open electives should not have already been taken as a core or restricted electives.												