

M.Tech. Specialization: Materials, Manufacturing and Modelling

DETAILED PROGRAMME 2025-26

First Semester (Autumn)					Second Semester (Spring)				
Courses	L	T	P	C	Courses	L	T	P	C
MM 621	3	0	0	6	Electives I (MM)	3	0	0	6
MM 732 + MM 733	3	0	0	6	Electives I (ME)	3	0	0	6
ME 785 OR 787 [#]	3	1	0	4	Electives III (MM/ME/SI)	3	0	0	6
ME 786 OR 788 [#]	3	1	0	4	Electives IV (MM/ME/SI)	3	0	0	6
ME 663 OR ME601*	3	0	0	6	Electives V (Inst. Elec.)	3	0	0	6
Restricted Elective	3	0	0	6	MMM 694 Seminar	0	0	4	4
MM 611 Lab Course	0	0.5	3	4					
ME 899 Communication Skills course	1	2	0	P/NP					
	Total Credits			36	Total Credits			34	
	<u>Core Courses</u> 1. MM 621: Advanced Physical and Mechanical Metallurgy 2. MM 732 + MM 733 3. ME 649: Advanced Manufacturing Processes I (Machining + Forming) 4. ME 785: Machining Processes, 5. ME 787: Deformation Processes 6. ME 786: Welding Processes, 7. ME 788: Liquid Material Processing 8. ME 663: Advanced Heat Transfer 9. ME 601: Stress Analysis ME 899: Communication Skills will be offered to MMM students in the Autumn Semester.				<u>Suggested Elective Courses (more course than this list are available to the student)</u> 1. MM 622: Advanced Concepts in Iron Making 2. MM 624: Advanced Concepts in Steel Making 3. MM 626: Thermomechanical Processing and Forming of steel 4. MM 721: Fatigue, Creep and Superplasticity 5. MM 658: Fracture Mechanics and Failure Analysis 6. MM 680: Welding Science and Technology 7. MM 756: Physical Metallurgy and Mechanical Properties of Steel 8. MM 6101: Additive Manufacturing with Metals				

<u>Laboratory Course</u> 1. MM 611: Processing and Characterization of Steel # half semester courses * Any one of the ME663/601 with the restriction <u>Restricted Elective (new)</u> ME 673: Mathematical Methods in Engineering ME 773: Reliability Modelling and Analysis for Engineering Systems ME 781: Engineering Data Mining and Applications	9. MM 677: Diffusion and Kinetics 10. MM 684: X-Ray Diffraction and Electron Microscopy 11. ME 794: Statistical Design of Experiments 12. SI 530: Statistical Quality Control 13. ME 662: Convective Heat Transfer & Mass Transfer 14. ME 680: Two-Phase Flow and Heat Transfer 15. ME 415. Computational Fluid Dynamics & Heat Transfer 16. ME602: Fatigue, Fracture and Failure Analysis 17. ME 616: Fracture Mechanics 18. ME 664: Advanced Finite and Boundary Element Methods 19. ME 756: Numerical Modeling of Manufacturing Processes 20. ME 714: Computer Integrated Manufacturing 21. ME 730: Ultra-Precision Machining 22. ME 617: Rapid Product Development 23. ME 735: Computer Graphics & Product Modeling 24. ME 613: Finite Element and Boundary Element Methods 25. ME 662: Convective Heat Transfer & Mass Transfer 26. ME 401: Microprocessors and Automatic Control 27. MA 540 Numerical methods for PDE 28. ME 761 Advanced Stereology and Microstructural Analysis 29. ME 6110 Nanomanufacturing Processes 30. ME 769 Combustion in Automobile and Gas Turbine Engines 31. ME 768 Introduction to Microsystems Packaging 32. ME 778 Moving Boundary Problems in Solidification 33. ME 6106 Computational Structural Dynamics 34. ME 751 Mechanics of Deformable
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		Bodies 35. CE 620 Finite Element Methods 36. EE 769 Introduction to Machine Learning 37. ME 681 Thermal Environmental Engg 38. ME 712 Computer Numerical Control and Programming 39. ME 785 Machining Process 40. ME 786 Welding Process 41. MM 749 Statistics and Probability for Materials Engineers 42. MM 656 Simulation and Optimization 43. ME645 MEMS 44. ME768 Introduction to Microsystems Packaging 45. MM 674 Materials & Processes for Semiconductor Devices This is not the complete list of electives.
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Third Semester (Autumn)					Fourth Semester (Spring)				
Courses	L	T	P	C	Courses	L	T	P	C
MMM 697	Project Stage - I			50	MMM 698	Project Stage - II			40
Total Credits				50	Total Credits				40

Note: The symbols ZZ are placeholders and would be replaced by appropriate department labels subsequently.

Features: 1. All core courses + 1 Restricted elective in the first semester.

2. Second semester – 4 electives from the three departments (minimum 1 from each list) seminar and 1 Institute elective (from the list of approved Institute electives).

The minimum credits for the proposed programme now works out to 160 depending on the restricted elective chosen by the student in the first semester.