

DEPARTMENT OF METALLURGICAL ENGINEERING AND MATERIALS SCIENCE
Credit Structure and semester-wise scheduling of courses for M.Tech. Programme

Specialization: **COMPUTATIONAL MATERIALS ENGINEERING**

	CREDITS				
Course Work	Sem I	Sem II	Sem III	Sem IV	Total Credits
Core Courses	12	12	-	-	24
Electives **	12	12	-	-	24
Ins. Elective	6	6	-	-	12
Lab. Course	3	3	-	-	6
Seminar	4	-	-	-	4
R&D Project	-	-	-	-	-
Communication skills	+6	-	-	-	+6
Training	-	-	-	-	
Course Total	37+6	33	-	-	70+6
Project			50	40	90
Total credits	37+6	33	50	40	160+6

** Three electives must be from the Restricted Elective list and one from Department Elective list.

First Semester					
Course No.	Course Name	L	T	P	C
	Specialization Core I	3	0	0	6
MM 6103	Differential Equations for Modeling Transport Phenomena	3	0	0	6
MM 612	Computation Lab	0	0	3	3

	Restricted Elective I	3	0	0	6
	Department Elective	3	0	0	6
	Institute Elective I	3	0	0	6
MM 694	Seminar	0	0	0	4
MM 899	Communication and Presentation Skills	1	2	0	6#
	Total credits				37+6

Specialization Core I: Either of the following two courses (If the students take both, they need not register for Specialization Core in the second semester):

(a) MM 651 Thermodynamics of Materials, or, (b) MM 759 Structure and Defects

List of Restricted Electives:

MM 747: First Principles Approach to Materials Science

MM 719: Introduction to Ab-initio Methods in Materials Modelling

MM 722: Molecular Simulations for Materials Engineering

MM 641: Numerical Methods in Materials Processing

List of Department Electives (any one from these two courses):

MM685: Electrical Materials: Fundamentals and Applications

MM730: Topics in Mechanical Behaviour of Materials

PP/NP Course, L – Lecture, T – Tutorial, P – Practical, C – Credit

Second Semester					
	Specialization Core II	3	0	0	6
MM 760	Case Studies in Multi-scale Modelling of Materials	3	0	0	6
MM 761	Computational Lab II	0	0	3	3
	Restricted Elective II	3	0	0	6
	Restricted Elective III	3	0	0	6
	Institute Elective II	3	0	0	6
	Total Credits				33

List of Specialization Core Courses (If the student had registered for 2 Specialization Core courses in Semester I, they need not register for Specialization Core in the second semester):
MM 677 Diffusion and Kinetics

List of Restricted Electives:

MM 6004: Machine Learning for Materials Engineering
MM 642: Modelling of Metallurgical Processes
MM 656: Simulation and Optimization
MM 749: Statistics and Probability for Materials Engineers
MM 6102: Computational Thermodynamics
MM 640: Modeling of Microstructural Evolution

Third Semester		
MM 797	Project Stage-I	50

Fourth Semester		
MM 798	Project Stage-II	40