

School of Materials Science and Technology

Cat.	Deviation	Programme Components	MST	Recommended (IV Years)	
				Min	Max
HLM	0	Humanities and Social Science, Language and Management	11	10	
IS	0	Science	25	22	
IE	0	Institute Requirement Engineering/ Pharmacy	18	15	
EP	0	Engineering Drawing (Manual and Computer Aided), Manufacturing Practices and Practice course of Department/ School	9.5	9	
DC-DE	0	Department/Programme Core + Elective	68	68	
OE	0	Open Elective (Interdisciplinary Stream courses from Science/ Engineering/Pharmacy)	6	6	
Ind/RI/ SUE	0	Industrial/Research internship/Start-ups or Entrepreneurship	15	15	
DP	0	Exploratory Project	3	3	
		Total	155.5	150	165
L: Lecture hours; T: Tutorial hours; P: Laboratory/ Practical hours; C: Credits					
Subject Area for Materials Science and Technology					
	Area Code	Name of the Areas			
	0	Fundamentals			
	1	Synthesis and Processing			
	2	Structure and Characterization			
	3	Properties and Applications			
	5	Laboratory			

B.Tech. Course Structure for Materials Science and Technology (2025-2026 onwards) (without minor or Second Major)

UG-CRC Code	Course Code	Course Name	L-T-P			Credits
Materials Science and Technology: 4-Year B.Tech. I-Semester						
IH.HLM101.18	HLM101	Universal Human Values	2	0	0	2
GY.PE101.14	PE101	Elementary Physical Education	0	1	3	2.5
GY.CP101.14	CP101	Creative Practices #	0	1	3	2.5
		Total	2	2	6	7
LM.HLM102.14	HLM102	English*	2	0	0	2
		Total	4	2	6	9
#Creative Practices course to be announced by Dean Academic Office						
*Basic English course to be taken by student as recommended after Diagnostic Test						
Materials Science and Technology: 4-Year B.Tech. I-Semester						
IS.CY101.14	CY101	Chemistry - I	2	0	4	4
IS.MA101.25	MA101	Engineering Mathematics - I	3	1	0	4
IE.CSO101.14	CSO101	Computer Programming	3	1	2	5
DC.MS101.14	MS101	Introduction to Engineering Materials	3	0	0	3
EP.ME105.14	ME105	Manufacturing Practice - I	0	0	3	1.5
EP.ME104.14	ME104	Engineering Drawing	1	0	3	2.5
		Total	12	2	12	20
Materials Science and Technology: 4-Year B.Tech. II-Semester						
IS.CY102.14	CY102	Chemistry - II	3	1	0	4

UG-CRC Code	Course Code	Course Name	L-T-P			Credits
IS.MA102.25	MA102	Engineering Mathematics – II	3	1	0	4
IE.ME103.14	ME103	Engineering Thermodynamics	3	1	0	4
IS.PHY101.14	PHY101	Physics-I (Classical, Quantum & Relativistic Mechanics)	3	1	2	5
EP.ME106.14	ME106	Manufacturing Practice – II	0	0	3	1.5
HLM	HLM	Humanities and Social Science, Language and Management	3	0	0	3
Total			15	4	5	21.5
Materials Science and Technology: 4-Year B.Tech. III-Semester						
IE.EO102.14	EO102	Fundamentals of Electronics Engineering	3	1	2	5
MC.PHY201.15	PHY201	Quantum Physics	3	1	0	4
DC.MS201.15	MS201	Phase Diagrams & Phase Transformations	3	0	0	3
EP.MS251.16	MS251	Microstructure of Engineering Materials	0	0	2	1
DC.MS204.17	MS204	Synthesis and Processing of Engineering Materials	3	0	0	3
DC.MS254.25	MS254	Materials Synthesis Lab	0	0	2	1
HLM	HLM	Humanities and Social Science, Language and Management	3	0	0	3
Total			15	2	6	20
Materials Science and Technology: 4-Year B.Tech. IV-Semester						
IS.MA203.14	MA203	Numerical Techniques	3	1	0	4
IE.MO102.14	MO102	Transport Phenomenon	3	1	0	4
MC.CY232.15	CY232	Quantum Chemistry	3	0	0	3
DC.MS202.15	MS202	Polymeric Materials	3	0	0	3
EP.MS253.16	MS253	Polymer Synthesis and Characterization Lab	0	0	2	1
DC.MS221.15	MS221	Crystallography & Crystal Structures	3	0	0	3
DP.MS.291.15	MS291	Exploratory Project	0	0	6	3
Total			15	2	8	21
Materials Science and Technology: 4-Year B.Tech. V-Semester						
DC.MS311.15	MS311	Polymer Processing	3	0	0	3
EP.MS351.16	MS351	Processing of Polymers Lab	0	0	2	1
DC.MS331.15	MS331	Physical Behaviour of Materials	3	0	0	3
DC.MS352.15	MS352	Physical Behaviour of Materials Lab	0	0	2	1
DC.MS321.15	MS321	Materials Characterization	3	0	0	3
DC.MS353.16	MS353	Materials Characterizations Lab	0	0	2	1
DC.MS304.17	MS304	Introduction to Metal and Alloys	3	0	0	3
OE - 1	OE - 1	Open elective - 1	3	0	0	3
Total			15	0	6	18
Materials Science and Technology: 4-Year B.Tech. VI-Semester						
DP.MS393.25	MS393	Industrial/Research internship/Start-ups or Entrepreneurships	0	0	30	15
Total			0	0	30	15
Materials Science and Technology: 4-Year B.Tech. VII-Semester						
DC.MS432.15	MS432	Mechanical Behaviour of Materials	3	0	0	3
DC.MS451.16	MS451	Mechanical Characterizations of Materials	0	0	2	1
DE.MS539.24	MS539	Computational Materials Science	3	0	0	3
DE - 1	DE - 1	Department Elective (DE) - 1	3	0	0	3
DE - 2	DE - 2	Department Elective (DE) - 2	3	0	0	3
OE - 2	OE - 2	Open elective - 2	3	0	0	3
HLM	HLM	Humanities and Social Science, Language and Management	3	0	0	3
Total			18	0	2	19
List of Electives DE1						
DC.MS533.15	MS533	Nanostructured Materials	3	0	0	3
DE.MS534.15	MS534	Functional Materials	3	0	0	3
List of Electives DE2						
DE.MS532.15	MS532	Magnetism & Magnetic Materials	3	0	0	3

UG-CRC Code	Course Code	Course Name	L-T-P			Credits
DE.MS301.15	MS301	Science of Ceramics	3	0	0	3
Materials Science and Technology: 4-Year B.Tech. VIII-Semester						
DC.MS506.15	MS506	Composite Materials	3	0	0	3
DC.MS332.15	MS332	Industrial Polymers	3	0	0	3
DE - 3	DE - 3	Department Elective (DE) - 3	3	0	0	3
DE - 4	DE - 4	Department Elective (DE) - 4	3	0	0	3
DE - 5	DE - 5	Department Elective (DE) - 5	3	0	0	3
DE - 6	DE - 6	Department Elective (DE) - 6	3	0	0	3
Total			18	0	0	18
List of Electives DE3						
DE.CY431.15	CY431	Solid State Chemistry	3	0	0	3
DE.MS333.15	MS333	Semiconducting Materials & Devices	3	0	0	3
DE.MS431.15	MS431	Advanced Ceramics	3	0	0	3
DE.MS337.16	MS337	Biomaterials	3	0	0	3
List of Electives DE4						
DE.MS538.24	MS538	Introduction to Quantum Materials	3	0	0	3
DE.CHI461.24	CHI461	Instrumental Methods of Chemical Analysis	3	0	0	3
DC.MS412.15	MS412	Thin Films, Interfaces & Multilayers	3	0	0	3
List of Electives DE5						
DE.MS504.15	MS504	Organic Electronics & Organic Conductors	3	0	0	3
DE.EP452.24	EP452	Fuel Cell				
DE.MS422.15	MS422	Diffraction Techniques in Materials Science (Pre req: MS221)	3	0	0	3
List of Electives DE6						
DE.MS505.15	MS505	Energy Materials	3	0	0	3
DE.MS541.24	MS541	Artificial Intelligence in Materials Science	3	0	0	3
DE.MS537.17	MS537	Photonics Materials	3	0	0	3
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