



B.TECH IN METALLURGICAL & MATERIALS ENGINEERING

Course of Study Code	Discipline Code	Discipline	Course Name	Course Type	Course Code	Course Details	L - T - P	Course Credit	Sem Credit	Internal Assessment (IA)		End Semester Examination (ESE)		Total Marks	Semester Marks	
										Theoretical	Practical	Theoretical	Practical			
BTC	BTCMT	B.TECH IN METALLURGICAL & MATERIALS ENGINEERING	1st Semester	Physics	BSC	BTCMTBSC101	BSC-1	3-1-3	5.5	17.5	30	20	70	30	150	500
			Mathematics - I	BSC	BTCMTBSC102	BSC-2	3-1-3	4	30		20	70	30	150		
			Basic Electrical Engineering	ESC	BTCMTESC101	ESC-1	3-1-2	5	30		20	70	30	150		
			Engineering Graphics & Design	ESC	BTCMTESC102	ESC-2	0-1-4	3	30		50	70	50	100		
			2nd Semester	Communicative English	HSMC	BTCMTHSMC201	HSMC-1	2-0-2	3	20.5	30	20	70	30	150	650
			Chemistry	BSC	BTCMTBSC201	BSC-3	3-1-3	5.5	30		20	70	30	150		
			Mathematics - II	BSC	BTCMTBSC202	BSC-4	3-1-0	4	30		20	70	30	150		
			Introduction to C Programming	ESC	BTCMTESC201	ESC-3	3-0-4	5	30		20	70	30	150		
			Workshop Practices	ESC	BTCMTESC202	ESC-4	0-1-4	3	30		50	70	50	100		
			3rd Semester	Economics for Engineers	HSMC	BTCMTHSMC301	HSMC-2	3-0-0	3	23	30		70		100	750
			Biology	BSC	BTCMTBSC301	BSC-5	2-1-0	3	30			70		100		
			Mathematics - III	BSC	BTCMTBSC302	BSC-6	3-1-0	4	30			70		100		
			Strength of Materials	ESC	BTCMTESC301	ESC-5	3-0-0	3	30			70		100		
			Engineering Mechanics	ESC	BTCMTESC302	ESC-6	3-1-0	4	30			70		100		
			Introduction to Materials Science	PCC	BTCMTPEC301	PCC-1	3-0-0	3	30			70		100		
			Materials Thermodynamics	PCC	BTCMTPEC302	PCC-2	3-0-0	3	30			70		100		
			Environmental Sciences	MC	BTCMTMC301	MC-1	0-0-0	0	15			35		50		
			4th Semester	Universal Human Values II: Understanding Harmony	HSMC	BTCMTHSMC401	HSMC-3	2-1-0	3	20	50		50		100	700
			Physical Metallurgy	PCC	BTCMTPEC401	PCC-3	3-0-2	4	30		20	70	30	150		
			Principles of Extractive Metallurgy	PCC	BTCMTPEC402	PCC-4	3-0-0	3	30			70		100		
			Mechanical Metallurgy	PCC	BTCMTPEC403	PCC-5	3-0-2	4	30		20	70	30	150		
			Fundamentals of Non-ferrous Metals	PEC (ANY ONE)	BTCMTPEC401	PEC-1	3-0-0	3	30			70		100		
			Light Metals and Alloys	PEC (ANY ONE)	BTCMTPEC402	PEC-2	3-0-0	3	30			70		100		
			Mineral Processing	OEC (ANY ONE)	BTCMTOEC401	OEC-1	3-0-0	3	30		70		100			
			Chemical Processing	OEC (ANY ONE)	BTCMTOEC402	OEC-2	3-0-0	3	30		70		100			
			5th Semester	Phase Transformations	PCC	BTCMTPEC501	PCC-6	3-0-2	4	24	30	20	70	30	150	850
			Materials Characterization	PCC	BTCMTPEC502	PCC-7	3-0-2	4	30		20	70	30	150		
			Foundry Process & Technology	PCC	BTCMTPEC503	PCC-8	3-0-2	4	30		20	70	30	150		
			Iron Making Process	PCC	BTCMTPEC504	PCC-9	3-0-0	3	30			70		100		
			Materials Processing	PEC (ANY ONE)	BTCMTPEC501	PEC-2	3-0-0	3	30			70		100		
			Metal Forming Processes	PEC (ANY ONE)	BTCMTPEC502	PEC-3	3-0-0	3	30			70		100		
			Composite Materials	PEC (ANY ONE)	BTCMTPEC503	PEC-4	3-0-0	3	30			70		100		
			Novel and Sustainable Materials	PEC (ANY ONE)	BTCMTPEC504	PEC-5	3-0-0	3	30			70		100		
			Ceramic and Polymeric Materials	PEC (ANY ONE)	BTCMTPEC505	PEC-6	3-0-0	3	30			70		100		
			Surface Engineering	PEC (ANY ONE)	BTCMTPEC506	PEC-7	3-0-0	3	30			70		100		
			6th Semester	Steel Making Process	PCC	BTCMTPEC601	PCC-10	3-0-0	3	23	30		70		100	900
			Environmental Degradation of Materials	PCC	BTCMTPEC602	PCC-11	3-0-2	4	30		20	70	30	150		
			Joining of Materials	PCC	BTCMTPEC603	PCC-12	3-0-2	4	30		20	70	30	150		
			Heat Treatment Technology	PCC	BTCMTPEC604	PCC-13	3-0-2	4	30		20	70	30	150		
			Powder Metallurgy	PEC (ANY ONE)	BTCMTPEC601	PEC-5	3-0-2	4	30		20	70	30	150		
Computational Materials Engineering	PEC (ANY ONE)	BTCMTPEC602	PEC-6	3-0-0	3	30		70			100					
Industrial Management and Environmental Control	OEC (ANY ONE)	BTCMTOEC601	OEC-2	3-0-0	3	30		70			100					
Production & Operation Management	OEC (ANY ONE)	BTCMTOEC602	OEC-3	3-0-0	3	30		70			100					
Internship in Industry/Research Institute/Academic Institute	PROJ	BTCMTPROJ601	PROJ-1	0-0-0	1		20		30		50					
Indian Constitution	MC	BTCMTMC601	MC-2	0-0-0	0	15		35			50					
7th Semester	Design and Selection of Materials	PCC	BTCMTPEC701	PCC-14	3-0-0	3	21	30		70		100	750			
Alloy Steel	PCC	BTCMTPEC702	PCC-15	3-0-0	3	30			70		100					
Non-destructive Testing & Evaluation	PCC	BTCMTPEC703	PCC-16	3-0-2	4	30		20	70	30	150					
Failure Mechanism & Analysis	PEC (ANY ONE)	BTCMTPEC701	PEC-6	3-0-0	3	30			70		100					
Fatigue & Fracture Mechanics	PEC (ANY ONE)	BTCMTPEC702	PEC-7	3-0-0	3	30			70		100					
Principles of X-Ray Diffraction	OEC (ANY ONE)	BTCMTOEC701	OEC-3	3-0-0	3	30			70		100					
Principles of Electron Microscopy	OEC (ANY ONE)	BTCMTOEC702	OEC-4	3-0-0	3	30			70		100					
Quality Assurance & Quality Control	OEC (ANY ONE)	BTCMTOEC703	OEC-5	3-0-0	3	30			70		100					
Optimization Techniques	OEC (ANY ONE)	BTCMTOEC704	OEC-6	3-0-0	3	30			70		100					
Soft Skill Development	LC	BTCMTLC701	LC-1	0-0-2	1			20		30	50					
Project Preliminary	PROJ	BTCMTPROJ701	PROJ-2	0-0-2	1		20		30	50						
8th Semester	Advance Materials	OEC (ANY ONE)	BTCMTOEC801	OEC-5	3-0-0	3	14	30		70		100	500			
Functional Materials	OEC (ANY ONE)	BTCMTOEC802	OEC-6	3-0-0	3	30			70		100					
Project & Thesis	PROJ	BTCMTPROJ801	PROJ-3	0-0-20	10			250		100	350					
General Viva Voce	LC	BTCMTLC801	LC-2	0-0-0	1					50	50					
TOTAL CREDITS AND MARKS										163				5600		

Abbreviations: HSMC= Humanities and Social Sciences including Management courses; BSC = Basic Science Course; ESC = Engineering Science Course; PCC = Professional Core Course; PEC = Professional Elective Course; OEC = Open Elective Course; MC = Mandatory Course; LC = Laboratory course; PROJ =Project; L= Lecture Hour; T= Tutorial Hour; P= Practical Hour

NOTE 1: Induction program (Mandatory non-credit course) of 3 weeks duration for students to be offered right at the start of the first year. Induction Program will have the following:

- Physical activity
- Creative Arts
- Universal Human Values-I
- Literary activity
- Proficiency Modules
- Lectures by Eminent People
- Visits to local Areas
- Familiarization to Dept./Branch & Innovations

Subject Type (No.xCredit)	MET, KNU
HSMC=3x3	9
BSC=(2x5.5)+(3x4)+(1x3)	26
ESC=(2x5)+(1x4)+(3x3)	23
PCC=(10x4)+(6x3)	58
PEC=6x3	18
OEC=5x3	15
LC/PROJ=(1x10)+(4x1)	14
Total Credits=	163

