Department of FMME

B. Tech. 1st Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	IDC1	NMCI101	Engineering Mathematics - I	3-0-0	Theory	3
2	DSC1	NFMC101	Introduction to Metallurgical Engineering	3-0-0	Theory	3
3	DSC2	NFMC102	Introduction to Metallurgical Engineering Lab	0-0-2	Practical	1
4	ESC1	NMNE101	Mine to Mill Operations	3-0-0	Theory	3
5	AEC1	NHSA103	Understanding Human Behaviour	2-1-0	Theory	3
6	SEC1	NMES101	Manufacturing Process	2-0-3	Practical	3.5
7	VAC1	NCSV101	Computer Programming	3-0-0	Theory	3
8	VAC2	NCSV102	Computer Programming Lab	0-0-2	Practical	1
						20.5

B. Tech. 2nd Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	IDC2	NCYI101	Engineering Chemistry	3-0-0	Theory	3
2	IDC3	NCYI102	Engineering Chemistry Lab	0-0-2	Practical	1
3	IDC4	NMCI102	Engineering Mathematics - II	3-0-0	Theory	3
4	DSC3	NFMC103	Introduction to Mineral Engineering	3-0-0	Theory	3
5	DSC4	NFMC104	Introduction to Mineral Engineering Lab	0-0-2	Practical	1
6	ESC2	NMEE102	Basic Mechanical Engineering	3-0-0	Theory	3
7	AEC2	NHSA101	Communication Skills	1-0-0	Theory	1
8	AEC3	NHSA102	Communication Skills Lab	0-0-2	Practical	1
	SEC2	NCES101	Engineering Graphics	1-0-3	Theory	2.5
	VAC3	NESV101	Environmental Science	3-0-0	Theory	3
						21.5

B. Tech. 3rd Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC3	NFMC201	Thermodynamics and Kinetics	3-1-0	Theory	4
2	DC4	NFMC202	Extractive Metallurgy	3-1-0	Theory	4
3	DC5	NFMC203	Physical Separation Processes - I	3-1-0	Theory	4
4	DP3	NFMC204	Comminution and Classification Laboratory	0-0-2	Practical	1
5	DP4	NFMC205	Extractive Metallurgy Laboratory	0-0-2	Practical	1
6	ESC3	NGLE201	Geology for Engineering and Sciences	3-0-0	Theory	3
7	AEC4	NFMA201	Communition and Classification	3-0-0	Theory	3
						20

B. Tech. 4th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC6	NFMC206	Physical Separation Processes - II	3-1-0	Theory	4
2	DC7	NFMC207	Phase Transformation and Heat Treatment	3-1-0	Theory	4
3	DC8	NFMC208	Iron Making	3-1-0	Theory	4
4	DP5	NFMC209	Introduction to Fuel Technology Laboratory	0-0-2	Practical	1
5	DP6	NFMC210	Phase Transformation and Heat Treatment Laboratory	0-0-2	Practical	1
6	ESC4	NCEE202	Fluid Mechanics and Machines	3-0-0	Theory	3
7	SEC4	NFMS201	Introduction to Fuel Technology	3-0-0	Theory	3
						20

B. Tech. 5th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC9	NFMC301	Coal and Mineral Process Equipment Selection	3-1-0	Theory	4
2	DC10	NFMC302	Steel Making	3-1-0	Theory	4
3	DE1		*To be chosen from the pool.*	3-0-0	Theory	3
4	DP7	NFMC303	Fine Particle Processing Laboratory	0-0-2	Practical	1
5	DP8	NFMC304	Physical Separation Processes Laboratory	0-0-2	Practical	1
6	HSSE1		*To be chosen from the HSS pool. HSS department to contribute courses to the pool below.*	3-0-0	Theory	3
7	DC1 (Minor)/ DC1 (Hons)			3-1-0	Theory	4
8	SDC1 (Minor)/ DP1 (Hons)			0-0-3	Practical	1.5
						21.5

B. Tech. 6th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC11	NFMC305	Processing Plant Design and Practices	3-1-0	Theory	4
2	DC12	NFMC306	Mechanical Metallurgy	3-1-0	Theory	4
3	DE2		*To be chosen from the pool.*	3-0-0	Theory	3
4	DP9	NFMC307	Mechanical Metallurgy Laboratory	0-0-2	Practical	1
5	HSSE2		*To be chosen from the HSS pool. HSS department to contribute courses to the pool below.*	3-0-0	Theory	3
6	DC2 (Minor)/ DC2 (Hons)			3-1-0	Theory	4
7	SDC2 (Minor)/ DP2 (Hons)			0-0-3	Practical	1.5
						20.5

B. Tech. 7th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DE3		*To be chosen from the pool.*	3-0-0	Theory	3
2	DE4		*To be chosen from the pool.*	3-0-0	Theory	3
3	DC3 (Minor)/ DC3 (Hons)			3-1-0	Theory	4
4	SDC3 (Minor)/ DP3 (Hons)			0-0-3	Practical	1.5
5	Project	NFMC401	Project - I	8-0-0	Project	8
6	Internship	NFMS401	Internship	0-0-0	Internship	4
						23.5

B. Tech. 8th Semester Course Structure

Sl.	Course Type	Course Code	Course Name	L-T-P	Course Category	Credits
1	DC4 (Minor)/ DC4 (Hons)			3-1-0	Theory	4
2	DC5 (Minor)/ DC5 (Hons)			3-1-0	Theory	4
3	SDC4 (Minor)/ DP4 (Hons)			0-0-3	Practical	1.5
4	Project	NFMC402	Project - II	8-0-0	Project	8
						17.5

POOLS/TABLES

MINOR TABLE

Title of Minor			Metallurgy				
Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**	**Semester**
1	DC1 (Minor)	NFMM301	Extractive and Process Metallurgy	3-1-0	Theory	4	5
2	SDC1 (Minor)	NFMM302	Process Metallurgy Laboratory	0-0-3	Practical	1.5	5
3	DC2 (Minor)	NFMC306	Mechanical Metallurgy	3-1-0	Theory	4	6
4	SDC2 (Minor)	NFMM303	Mechanical Behaviour of Materials Laboratory	0-0-3	Practical	1.5	6
5	DC3 (Minor)	NFMM401	Physical Metallurgy	3-1-0	Theory	4	7
6	SDC3 (Minor)	NFMM402	Physical Metallurgy Laboratory	0-0-3	Practical	1.5	7
7	DC4 (Minor)	NFMM403	Sustainable Metallurgy	3-1-0	Theory	4	8
8	DC5 (Minor)	NFMM404	Processing of Materials	3-1-0	Theory	4	8
9	SDC4 (Minor)	NFMM405	Design and Processing of Materials Laboratory	0-0-3	Practical	1.5	8
						26 - Minor	

HONORS TABLE

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**
1	DC1 (Hons)	NFMH301	Characterisation of Materials	3-1-0	Theory	4
2	DP1 (Hons)	NFMH302	Characterisation of Materials Laboratory	0-0-3	Practical	1.5
3	DC2 (Hons)	NFMH303	Hydrometallurgy for Critical Metal Extraction	3-1-0	Theory	4
4	DP2 (Hons)	NFMH304	Hydrometallurgy Laboratory	0-0-3	Practical	1.5
5	DC3 (Hons)	NFMH401	Materials Handling Systems	3-1-0	Theory	4
6	DP3 (Hons)	NFMH402	Materials Handling Systems Laboratory	0-0-3	Practical	1.5
7	DC4 (Hons)	NFMH403	Modelling in Mineral Engineering	3-1-0	Theory	4
8	DC5 (Hons)	NFMH404	Metal Forming and Processing Technology	3-1-0	Theory	4
9	DP4 (Hons)	NFMH405	Simulation in Mineral Engineering Laboratory	0-0-3	Practical	1.5
						26 - Hons.

POOL of ESC (except MS & HSS)

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**	**Semester**
1	ESC3	NFME201	Particle Technology	3-0-0	Theory	3	3
2	ESC4	NFME202	Properties and Application of Materials	3-0-0	Theory	3	4

POOL of AEC (except HSS)

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**
1	AEC	NFMA201	Comminution and Classification	3-0-0	Theory	3
2	AEC			3-0-0	Theory	3

POOL of SEC (except HSS)

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**	**Semester**
1	SEC			3-0-0	Theory	3	3
2	SEC	NFMS201	Introduction to Fuel Technology	3-0-0	Theory	3	4

POOL of UG DE course

Sl.	**Course Type**	**Course Code**	**Course Name**	**L-T-P**	**Course Category**	**Credits**	**Level of Course**
1	DE	NFMD301	Surface Phenomena and Froth Flotation	3-0-0	Theory	3	**3**
2	DE	NFMD302	Welding Metallurgy	3-0-0	Theory	3	**3**
3	DE	NFMD303	Non-Ferrous Extractive Metallurgy	3-0-0	Theory	3	**3**
4	DE	NFMD304	Fluid Flow, Heat and Mass Transfer	3-0-0	Theory	3	**3**
5	DE	NFMD305	Fundamentals of Stainless Steel: Transformation and Proc	3-0-0	Theory	3	**3**
6	DE	NFMD306	Mineral Processing Economics	3-0-0	Theory	3	**3**
7	DE	NFMD401	Electrochemistry and Corrosion	3-0-0	Theory	3	**4**
8	DE	NFMD402	Dewatering and Drying Technology	3-0-0	Theory	3	**4**
9	DE	NFMD403	AI and ML in Mineral and Metallurgical Engineering	3-0-0	Theory	3	**4**
10	DE	NFMD404	Powder Metallurgy	3-0-0	Theory	3	**4**
11	DE	NFMD405	Process Control and Instrumentation	3-0-0	Theory	3	**4**
12	DE	NFMD406	Material Science of Additive Manufacturing	3-0-0	Theory	3	**4**
13	DE	NFMD407	Process Equipment Design	3-0-0	Theory	3	**4**
14	DE	NFMD408	Analysis and Modelling of Welding	3-0-0	Theory	3	**4**
15	DE	NFMD409	Fuels to Chemicals	3-0-0	Theory	3	**4**
16	DE	NFMD410	Clean Coal Technology	3-0-0	Theory	3	**4**