

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
REVISED COURSE STRUCTURE – To be effective from academic session 2022-23
Based on CBCS &OBE Model
Recommended scheme of study for M.Tech. (Mechanical Engineering)

SEMESTER /Session of Study (Recommended)	Course Level	Course Code	Courses	Mode of delivery & credits L-Lecture; T-Tutorial; P-Practicals			Total Credits C-Credits
				L (Periods/week)	T (Periods/week)	P (Periods/week)	C
THEORY							
FIRST/ Monsoon	Fifth	ME 507	Optimization Techniques	3	0	0	3
		ME 511	Finite Element Analysis	3	0	0	3
		ME 521	Computational Methods in Engineering	3	0	0	3
		ME 526	Fluid Power and Control	3	0	0	3
		ME 549	Energy Simulation and Modeling	3	0	0	3
LABORATORIES							
	Fifth	ME 548	Computational Lab	0	0	4	2
		ME 591	Modeling and Optimization Lab	0	0	4	2
		MT 132	Communication Skills I	0	0	3	1.5
						Total	20.5

Electives (Specialization: Heat Power Engineering)

Any five courses have to be selected from the theory

SEMESTER /Session of Study (Recommended)	Course Level	Course Code	Courses	Mode of delivery & credits L-Lecture; T-Tutorial; P-Practicals			Total Credits C-Credits
				L (Periods/week)	T (Periods/week)	P (Periods/week)	C
THEORY							
SECOND/ Spring	Fifth	ME 592	Advanced Heat Transfer	3	0	0	3
		ME 593	Advanced Fluid Mechanics	3	0	0	3
		ME 594	Experimental Methods in Thermal Engineering	3	0	0	3
		ME 504	Computational Fluid Dynamics	3	0	0	3
		ME 561	Classical and Statistical Thermodynamics	3	0	0	3
		ME 565	Theory and Design of I.C. Engines	3	0	0	3
		ME 569	Advanced Refrigeration & Air Conditioning	3	0	0	3
		ME 573	Design of Thermal Systems	3	0	0	3
		ME 574	Advanced Turbo-Machines	3	0	0	3
ME 579	Design and Analysis of Heat Exchangers	3	0	0	3		
LABORATORIES							
	Fifth	ME 595	Thermo-Fluid Lab	0	0	4	2
		ME 596	Thermal Engineering Lab	0	0	4	2
		MT 133	Communication Skills II	0	0	3	1.5
						Total	20.5

Electives (Specialization: Energy Technology)

Any five courses have to be selected from the theory

SEMESTER /Session of Study (Recommended)	Course Level	Course Code	Courses	Mode of delivery & credits L-Lecture; T-Tutorial; P-Practicals			Total Credits C-Credits
				L (Periods/week)	T (Periods/week)	P (Periods/week)	C
THEORY							
SECOND/ Spring	Fifth	ME 542	Fuel Technology	3	0	0	3
		ME 543	Energy Conversion System	3	0	0	3
		ME 544	Wind Energy	3	0	0	3
		ME 545	Solar Passive Architecture	3	0	0	3
		ME 546	Hydrogen Energy System	3	0	0	3
		ME550	Bioconversion and Processing of Waste	3	0	0	3
		ME551	Solar Photovoltaic System	3	0	0	3
		ME 554	Energy Management and Auditing	3	0	0	3
		ME 555	Energy Storage Technology				
		ME 576	Advanced Energy Technology	3	0	0	3
LABORATORIES							
	Fifth	ME 547	Energy Lab - I	0	0	4	2
		ME 558	Energy Lab - II	0	0	4	2
		MT 133	Communication Skills II	0	0	3	1.5
						Total	20.5

Electives (Specialization: Design of Mechanical Equipment)

Any five courses have to be selected from the theory

SEMESTER /Session of Study (Recommended)	Course Level	Course Code	Courses	Mode of delivery & credits L-Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
				L (Periods/week)	T (Periods/week)	P (Periods/week)	
THEORY							
SECOND/ Spring	Fifth	ME 597	Theory of Elasticity and Plasticity	3	0	0	3
		ME 503	Advanced Stress Analysis	3	0	0	3
		ME 506	Applied Tribology	3	0	0	3
		ME 522R1	Advanced Mechanics of Solids	3	0	0	3
		ME 523R1	Applied Dynamics & Vibration	3	0	0	3
		ME 524	Advanced Engineering Materials	3	0	0	3
		ME 525R1	Robotics Manipulator Design	3	0	0	3
		ME 532R1	Fracture Mechanics	3	0	0	3
		ME 533	Automatic Control	3	0	0	3
		ME 538R1	Rotor Dynamics				
LABORATORIES							
	Fifth	ME 537	Robotics Laboratory	0	0	4	2
		ME 528R1	Advanced Solid Mechanics and Vibration Lab	0	0	4	2
		MT 133	Communication Skills II	0	0	3	1.5
						Total	20.5

Electives (Specialization: Computer Aided Analysis and Design)

Any five courses have to be selected from the theory

SEMESTER /Session of Study (Recommended)	Course Level	Course Code	Courses	Mode of delivery & credits L-Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
				L (Periods/week)	T (Periods/week)	P (Periods/week)	C
THEORY							
SECOND/ Spring	Fifth	ME 597	Theory of Elasticity and Plasticity	3	0	0	3
		ME 502	Advanced Computer Aided Design	3	0	0	3
		ME 503	Advanced Stress Analysis	3	0	0	3
		ME 505	Mechatronics	3	0	0	3
		ME 506	Applied Tribology	3	0	0	3
		ME 512	Reverse Engineering and Rapid Prototyping	3	0	0	3
		ME 519	Computer Graphics	3	0	0	3
		ME 515R1	Computer Integrated Manufacturing	3	0	0	3
		ME 520R1	Additive Manufacturing	3	0	0	3
ME 525R1	Robotics Manipulator Design	3	0	0	3		
LABORATORIES							
	Fifth	ME 537	Robotics Laboratory	0	0	4	2
		ME516	Advanced CAD & RE Lab	0	0	4	2
		MT 133	Communication Skills II	0	0	3	1.5
						Total	20.5
THIRD/ Monsoon	Sixth	ME600	Thesis (Part I)				8
			OE I /MOOC I	3	0	0	3
			OE II/MOOC II	3	0	0	3
						Total	14
FOURTH/ Spring	Sixth	ME650	Thesis (Part II)				16
GRAND TOTAL FOR M. TECH PROGRAMME (41+30)							71

List of Open Electives

S.N.	Name of the course with course code	Open Elective I/ Open Elective II/	L	P	Total Credit
1	Design Methodology- ME682	Open Elective I	3	0	3
2	Renewable Source of Energy- ME683	Open Elective I	3	0	3
3	Energy Management & Auditing – ME684	Open Elective II	3	0	3
4	Industrial Robotics- ME685	Open Elective II	3	0	3
5	Reliability in Design-ME686	Open Elective II	3	0	3