

Indian Institute of Engineering Science and Technology, Shibpur
Course Structure for Two-Year M.Tech Program (From 2019 Onward)
Department of Mechanical Engineering

Specialization : Thermal Engineering

1st Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Marks
			L	T	P		
1.	Paper I: Advanced Engineering Thermodynamics	ME5101	3			3	100
2.	Paper II: Viscous Flow Theory	ME5102	3			3	100
3.	Paper III: Internal Combustion Engine	ME5103	3			3	100
4.	Paper IV: (One Departmental Elective: See the list below)	ME5121 to ME5124	3			3	100
5.	Paper V: (One Open Elective: Offered by other Departments)		3			3	100
	Theory Sub-total		15			15	500
6.	Thermal Simulation Laboratory	ME5171			3	2	50
7.	Advanced Heat Transfer Laboratory	ME5172			3	2	50
8.	Advanced Internal Combustion Engine Laboratory	ME5173			3	2	50
	Practical Sub-total				9	6	150
	1st Semester Total					21	650

2nd Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Marks
			L	T	P		
1.	Paper VI: Design of Refrigeration and Air-Conditioning Systems	ME5201	3			3	100
2.	Paper VII: Advanced Heat Transfer	ME5202	3			3	100
3.	Paper VIII: Gas Turbines and Compressors	ME5203	3			3	100
4.	Paper IX (One Departmental Elective: See the list below)	ME5221 to ME5227	3			3	100
5.	Paper X (One Open Elective: Offered by other Departments)		3			3	100
	Theory Subtotal		15			15	500
6.	M. Tech thesis Part - I (Term Paper)	ME5291				4	200
7.	Term Paper Seminar & Viva-voce	ME5292				2	100
	Practical Subtotal					6	300
	2nd Semester Total					21	800

<u>Paper IV [Departmental Electives]</u>		<u>Paper IX [Departmental Electives]</u>	
ME 5121	Combustion Science and Technology	ME 5221	Solar Thermal Engineering
ME 5122	Steam Power Engineering	ME 5222	Numerical Heat Transfer
ME 5123	Gas Dynamics and Propulsion	ME 5223	Greenhouse Technology
ME 5124	Fuel Cell Technology	ME 5224	Cryogenic systems and Equipment
		ME 5225	Nuclear Power Engineering

		ME 5226	Alternative Energy
		ME 5227	Design of Thermal Systems

Specialization : Machine Design

1st Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Marks
			L	T	P		
1.	Paper I: Advanced Solid Mechanics	ME5106	3			3	100
2.	Paper II: Mechanical Vibration	ME5107	3			3	100
3.	Paper III: Engineering Tribology	ME5108	3			3	100
4.	Paper IV: (One Departmental Elective: See the list below)	ME5131 to ME5135	3			3	100
5.	Paper V: (One Open Elective: Offered by other Departments)		3			3	100
	Theory Sub-total		15			15	500
6.	Tribology Laboratory	ME5176			3	2	50
7.	Mini Project related to Mechanical Vibration	ME5177				2	50
8.	Mini Project related to Advance Solid Mechanics	ME5178				2	50
	Practical Sub-total				3	6	150
	1st Semester Total					21	650

2nd Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Marks
			L	T	P		
1.	Paper VI: Fatigue, Creep and Fracture Mechanics	ME5206	3			3	100
2.	Paper VII: Geometric Modelling For CAD	ME5207	3			3	100
3.	Paper VIII: Nonlinear Dynamics	ME5208	3			3	100
4.	Paper IX (One Departmental Elective: See the list below)	ME5231 to ME5237	3			3	100
5.	Paper X (One Open Elective: Offered by other Departments)		3			3	100
	Theory Subtotal		15			15	500
6.	M. Tech thesis Part - I (Term Paper)	ME5291				4	200
7.	Term Paper Seminar & Viva-voce	ME5292				2	100
	Practical Subtotal					6	300
	2nd Semester Total					21	800

<u>Paper IV [Departmental Electives]</u>		<u>Paper IX [Departmental Electives]</u>	
ME 5131	Applied Elasticity and Plasticity	ME 5231	Bearing Lubrication
ME 5132	Advanced Mechanics of Machines	ME 5232	Dynamics and Control of Mechanical Systems
ME 5133	Biomechanics	ME 5233	Composite Materials
ME 5134	Finite Element Methods	ME 5234	Design of Piping Systems
ME 5135	Design Optimization	ME 5235	Industrial Tribology

		ME 5236	Mechanical Drives and Control
		ME 5237	Non-Destructive Testing of Materials

Specialization : Manufacturing Science

1st Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Marks
			L	T	P		
1.	Paper I: Advanced Theory of Metal Cutting	ME5111	3			3	100
2.	Paper II: Non-traditional Machining	ME5112	3			3	100
3.	Paper III: Advanced Material Processing Technology	ME5113	3			3	100
4.	Paper IV: (One Departmental Elective: See the list below)	ME5141 to ME5144 & ME5150	3			3	100
5.	Paper V: (One Open Elective: Offered by other Departments)		3			3	100
	Theory Sub-total		15			15	500
6.	Metal Cutting Laboratory	ME5181			3	2	50
7.	Non-Traditional Machining Laboratory	ME5182			3	2	50
8.	Advanced Material Processing Technology Laboratory	ME5183			3	2	50
	Practical Sub-total				9	6	150
	1st Semester Total					21	650

2nd Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Marks
			L	T	P		
1.	Paper VI: Energy Beam Processing of Materials	ME5211	3			3	100
2.	Paper VII: Advanced Operations Research	ME5212	3			3	100
3.	Paper VIII: Metal Forming	ME5213	3			3	100
4.	Paper IX (One Departmental Elective: See the list below)	ME5241 to ME5247	3			3	100
5.	Paper X (One Open Elective: Offered by other Departments)		3			3	100
	Theory Subtotal		15			15	500
6.	M. Tech thesis Part - I (Term Paper)	ME5291				4	200
7.	Term Paper Seminar & Viva-voce	ME5292				2	100
	Practical Subtotal					6	300
	2nd Semester Total					21	800

<u>Paper IV [Departmental Electives]</u>		<u>Paper IX [Departmental Electives]</u>	
ME 5141	Industrial Engineering	ME 5241	Quantitative Techniques in Production Management
ME 5142	Design of Production Systems	ME 5242	Operations Management
ME 5143	Computer Integrated Manufacturing Systems	ME 5243	Advanced Material Management
ME 5144	Quality Engineering	ME 5244	Material Handling

ME 5150	Human Resource Management	ME 5245	Maintenance and Reliability
		ME 5246	Industrial Automation
		ME 5247	Advanced Machining Technology

<u>Paper V [Open Elective]</u> (Offered by Department of Mechanical Engineering for the other Departments)		<u>Paper IX [Open Elective]</u> (Offered by Department of Mechanical Engineering for the other Departments)	
ME 5161	Renewable Energy	ME 5261	Industrial Robotics

Specialization: ALL

3rd Semester

Sl. No	Course Name	Course code	Credit	Marks
1.	M. Tech Thesis Part - II (Progress Report)	ME 6191	12	300
2.	Progress Report Seminar & Viva-voce	ME 6192	6	100
	3rd Semester Total		18	400

Specialization: ALL

4th Semester

Sl. No	Course Name	Course code	Credit	Marks
1.	M. Tech Final thesis	ME 6291	22	400
2.	Thesis Seminar & Viva-voce	ME 6292	8	200
	4th Semester Total		30	600

Total Credit: 21+21+18+30=90