PG Curriculum

M.Tech — Aerospace Engineering (AE)

Semester -1

Code	Credits	Course-Title
ME5010	3	Mathematical Methods for Engineers
AE5101	1	Aerospace Laboratory-Computations
AE5110	3	Aerodynamics and Propulsion
AE5120	3	Flight Dynamics and Structures
LAXXXX	1	English Communication
AE/MEXXXX	3	Department Elective
	14	

Semester -2

Code	Credits	Course-Title
AE5111	1	Aerospace Laboratory-Experimentations
MEXXXX	1	Seminar
MEXXXX	1	Industry Lectures
AE/MEXXXX	9	Department Electives
	12	

Semester -3

Code	Credits	Course-Title
ME6005	12	Thesis Stage-1
	12	

Semester -4

Code	Credits	Course-Title
ME6505	12	Thesis Stage-2
	12	

M.Tech — Integrated Design & Manufacturing (IDM)

Semester -1

Code	Credits	Course-Title
ME5010	3	Mathematical Methods for Engineers
ME5130	3	Finite Element Method
ME5020	1.5	Elasticity and Plasticity
ME5080	1.5	Scaling Laws and Multi-scale Manufacturing
ME5210	3	CAD/CAM
LAXXXX	1	English Communication
	13	

Semester -2

Code	Credits	Course-Title
ME5030	1.5	Fluid Mechanics & Heat Transfer
ME5040	1.5	Computational Fluid Dynamics Tools
ME5421	1	FEM Lab
ME5431	2	Integrated Design & Manufacturing Lab
MEXXXX	6	Department Electives
MEXXXX	1	Seminar
MEXXXX	1	Industry Lectures
	14	

Semester -3

Code	Credits	Course-Title
ME6005	12	Thesis Stage-1
	12	

Semester -4

Code	Credits	Course-Title
ME6505	12	Thesis Stage-2
	12	

M.Tech — Robotics and Intelligent Systems (RIS - 2025)

Semester -1

Code	Credits	Course-Title
ME5010	3	Mathematical Methods for Engineers
ME5430	3	Introduction to Robotics
ME4XXX	3	Control Systems
ME6040	3	Machine Learning and Its Applications
ME5XXX	1	Sensors and Actuators Lab (1-3 segment)
ME5XXX	1	Robotics and Automation Lab (4-6 segment)
	14	

Semester -2

Code	Credits	Course-Title
ME5XXX	9	Electives
	1	Seminar
	1	Industry Lectures
	1	English Communication
ME5XXX	1	Vision Lab (1-3 segment)
ME5XXX	1	Advanced Robotics Lab (4-6 segment)
	14	

Semester -3

Code	Credits	Course-Title
	4	Thesis Stage-1
	10	Thesis Stage-2
	14	

Semester -4

Code	Credits	Course-Title
	10	Thesis Stage-3
	10	

M.Tech — Thermo - Fluid Engineering (TFE)

Semester -1

Code	Credits	Course-Title
ME5010	3	Mathematical Methods for Engineers
ME5310	3	Incompressible Fluid Flow
ME5320	3	Advanced Heat Transfer
LAXXXX	1	English Communication
MEXXXX	3	Core Elective
	13	

Semester -2

Code	Credits	Course-Title
MEXXXX	9	Department Electives
ME5441	1	CFD Lab
ME5971	2	Thermo-fluid Engineering Core Lab II
MEXXXX	1	Seminar
MEXXXX	1	Industry Lectures
	14	

Semester -3

Code	Credits	Course-Title
ME6005	12	Thesis Stage-1
	12	

Semester -4

Code	Credits	Course-Title
ME6505	12	Thesis Stage-2
	12	

M.Tech — Computational Mechanics (CM - Online)

Semester -1/3/5

Code	Credits	Course-Title
ME5139	3	Finite Element Method
ME5339	3	Computational Fluid Dynamics
ME5899	2	Structural Optimization
ME5769	1.5	Applied Solid Mechanics
ME5779	1.5	Applied Fluid Mechanics
ME5909	2	Additive Manufacturing Technology
	13	

Semester -2/4/6

Code	Credits	Course-Title
ME5789	3	Computational Dynamics and Vibrations
ME5819	3	Advanced Computational Fluid Dynamics
ME5799	3	Topics in Computational Mechanics
ME5429	1	FEM Lab
ME5449	1	CFD Lab
	11	

Semester -3/5/7

Code	Credits	Course-Title
ME6005	12	Project
	12	

Semester -4/6/8

Code	Credits	Course-Title
ME6505	12	Project
	12	

M.Tech — Mechanics & Design (MAD)

Semester -1

Code	Credits	Course-Title
ME5010	3	Mathematical Methods for Engineers
ME5110	3	Advanced Mechanics of Solids
ME5120	3	Dynamics and Vibration
ME5011	1	Data Acquisition and Control Lab
MEXXXX	3	Department Elective
LAXXXX	1	English Communication
	14	

Semester -2

Code	Credits	Course-Title
MEXXXX	9	Department Electives
ME5021	1	Vibration Lab
MEXXXX	1	Seminar
MEXXXX	1	Industry Lectures
	12	

Semester -3

Code	Credits	Course-Title
ME6005	12	Thesis Stage-1
	12	

Semester -4

Code	Credits	Course-Title
ME6505	12	Thesis Stage-2
	12	

PhD

- A minimum of 12 credits
- For direct PhD (with B.Tech. degree): 24 Credits
- Thesis after comprehensive exam

Code	Credits	Course-Title
ME5010	3	Mathematical Methods for Engineers
MEXXXX	3-9	Cores/Electives

Department Electives

Semester -1

Code	Credits	Course-Title	
ME5020	1.5	Elasticity and Plasticity	Thermo - Fluid Engineering (TFE)
ME5080	1.5	Scaling Laws and Multi-scale Manufacturing	
ME5260	3	Continuum Mechanics	
ME5110	3	Advanced Mechanics of Solids	Aerospace Engineering (AE)
ME5120	3	Dynamics and Vibration	
ME5330	3	Computational Fluid Dynamics	
ME5340	3	IC Engine Combustion and Pollution	
ME5480	3	Sustainable Energy Technology: Energy Sources, Energy Efficiency, Storage and Optimization	
ME5130	3	Finite Element Method	Mechanics & Design (MAD)
ME5310	3	Incompressible Fluid Flow	
ME5320	3	Advanced Heat Transfer	
ME5430	3	Introduction to Robotics	

Semester -2

Code	Credits	Course-Title	
ME5200	1.5	Additive Manufacturing	Integrated Design & Manufacturing (IDM)
ME5220	1.5	Material Removal Processes	
ME5240	1.5	Metal Forming	
ME5250	1.5	Design for Manufacturability and Assembly	
ME5530	1.5	Industry 4.0	
ME5440	1.5	Introduction to Machine Vision	
ME5720	1.5	Advanced Material Joining Processes	
ME5690	3	Advanced FEM	Mechanics & Design (MAD)
ME6040	3	Machine Learning and Its Applications	
ME7100	3	Advanced Topics in Mathematical Tools	
ME5610	3	Fracture Mechanics	
ME5650	3	Engineering Noise Control	
ME5670	3	Vehicle Dynamics and Modeling	
ME5723	3	Experimental Solid Mechanics	
ME5630	3	Nonlinear Oscillation	
ME5700	3	Analysis and Design of Composite Structures	
AE5010	3	Introduction to Flight	Aerospace Engineering (AE)
AE5020	3	Aerospace Structural Mechanics	
AE5030	3	Flight Vehicle Aerodynamics	
AE5040	3	Aeroelasticity	
AE5050	3	Aerospace Propulsion	
AE5060	3	Spacecraft Dynamics and Control	
AE5070	3	High-speed Aerodynamics	
ME5270	3	Interfacial Phenomenon	
ME5690	3	Advanced FEM	
ME5910	3	Combustion Technology	
ME5280	3	Hypersonic and High Temperature Aerodynamics	Thermo - Fluid Engineering (TFE)
ME5470	3	Introduction to Parallel Scientific Computing	
ME5760	3	Microhydrodynamics	
ME5820	3	Turbulence	
ME6040	3	Machine Learning and Its Applications	
ME7100	3	Advanced Topics in Mathematical Tools	
ME5810	3	Advanced Computational Fluid Dynamics	
ME5830	3	Compressible Flow and Its Computation	
ME5860	1	Introduction to Combustion and Reactor Models	
ME5870	2	Chemical Kinetics and Modeling in Reacting Flows	
ME5270	3	Interfacial Phenomenon	
ME5XXX	3	Soft Robotics	Robotics and Intelligent Systems (RIS)
ME5XXX	3	Underactuated Robotics	
ME5XXX	3	Marine Robotics	
ME5XXX	3	Autonomous Robotic Systems	