

Department of Mechanical Engineering

Programmes offered

1. B.Tech. Mechanical Engineering
2. B.Tech. (Hons.) Mechanical Engineering with Specialization in Robotics and Industrial Automation
3. B.Tech. (Hons.) Mechanical Engineering with Specialization in Energy Engineering
4. M.Tech. Renewable Energy

Details of Curriculum applicable for different batches of B.Tech. admitted students

Batch	Applicable Curriculum	Remarks
2020 - 2024	Regulation 2018 Revision II	
2021 - 2025	Regulation 2021 Revision I	Same curriculum
2022 - 2026	Regulation 2021 Revision I	
2023 - 2027	Regulation 2021 Revision II	

B.Tech. Mechanical Engineering - Regulation 2021 Revision II**SEMESTER I**

S.No.	Course Code	Category	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XMA101	BSC	Calculus and Linear Algebra	3	1	0	4	3	1	0	4
2.	XCP102	ESC	Programming for Problem Solving	3	0	0	3	3	0	0	3
3.	XAC103	BSC	Applied Chemistry for Engineers	3	1	0	4	3	1	0	4
4.	XEG104	ESC	Engineering Graphics and Design	1	0	2	3	1	0	4	5
5.	XGS105	HSMC	Speech Communication	0	1	2	3	0	1	4	5
6.	XUM106	MC	Constitution of India	0	0	0	0	3	0	0	3
7.	XCP107	ESC	Programming for Problem Solving Laboratory	0	0	1	1	0	0	2	2
8.	XAC108	BSC	Applied Chemistry Laboratory for Engineers	0	0	1	1	0	0	2	2
			Total				19				28

SEMESTER II

S.No.	Course Code	Category	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XMA201	BSC	Calculus, Ordinary Differential Equations and Complex Variables	3	1	0	4	3	1	0	4
2.	XBE202	ESC	Electrical and Electronic Engineering Systems	3	1	0	4	3	1	0	4
3.	XAP203	BSC	Applied Physics for Engineers	3	1	0	4	3	1	0	4
4.	XGS204	HSMC	Technical Communication	2	0	0	2	2	0	0	2
5.	XWP205	ESC	Workshop Practices	1	0	2	3	1	0	4	5
6.	XEM206	ESC	Engineering Mechanics	3	0	0	3	3	0	0	3
7.	XBE207	ESC	Electrical and Electronic Engineering Systems Laboratory	0	0	1	1	0	0	2	2
8.	XAP208	BSC	Applied Physics for Engineers Laboratory	0	0	1	1	0	0	2	2
			Total				22				26

SEMESTER III

S.No.	Course Code	Category	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XMA301	BSC	Transforms and Partial Differential Equations	3	0	0	3	3	0	0	3
2.	XME302	PCC	Thermodynamics	3	1	0	4	3	1	0	4
3.	XME303	PCC	Strength of Materials	3	1	0	4	3	1	0	4
4.	XME304	PCC	Materials Engineering	3	0	0	3	3	0	0	3
5.	XME305	PCC	Machine Drawing	1	0	1	2	1	0	2	3
6.	XUM306	HSMC	Entrepreneurship Development	2	0	0	2	2	0	0	2
7.	XUM307	MC (HSMC)	Universal Human Values 2 : Understanding Harmony and gender	3	0	0	3	3	0	0	3
8.	XME308	PCC	Strength of Materials Laboratory	0	0	1	1	0	0	2	2
9.	XME309	PCC	Computer Aided Drafting Laboratory	0	0	1	1	0	0	2	2
10.	XME310	PROJ	In-plant Training - I	-	-	-	1	-	-	-	-
			Total				24				26

SEMESTER IV

S.No.	Course Code	Category	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XMA401	BSC	Probability Distribution and Statistical Methods	3	0	0	3	3	0	0	3
2.	XME402	PCC	Applied Thermodynamics	3	1	0	4	3	1	0	4
3.	XME403	PCC	Fluid Mechanics and Fluid Machines	3	1	0	4	3	1	0	4
4.	XME404	PCC	Instrumentation and Control	3	0	0	3	3	0	0	3
5.	XUM405	HSMC	Economics for Engineers	3	0	0	3	3	0	0	3
6.	XUM406	MC	Disaster Management	0	0	0	0	3	0	0	3
7.	XME407	PCC	Thermal Engineering Laboratory	0	0	1	1	0	0	2	2
8.	XME408	PCC	Fluid Mechanics and Fluid Machines Laboratory	0	0	1	1	0	0	2	2
			Total				19				24

SEMESTER V

S.No.	Course Code	Category	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XME501	PCC	Heat Transfer	3	1	0	4	3	1	0	4
2.	XME502	PCC	Solid Mechanics	3	1	0	4	3	1	0	4
3.	XME503	PCC	Manufacturing Processes	3	0	0	3	3	0	0	3
4.	XME504	PCC	Kinematics and Theory of Machines	3	1	0	4	3	1	0	4
5.	XME505	PEC	Professional Elective Course – I	3	0	0	3	3	0	0	3
6.		OE	Open Elective Course – I	3	0	0	3	3	0	0	3
7.	XME507	PCC	Heat Transfer and Refrigeration Laboratory	0	0	1	1	0	0	2	2
8.	XME508	PCC	Kinematics and Theory of Machines Laboratory	0	0	1	1	0	0	2	2
9.	XME509	PROJ	In-plant Training – II	-	-	-	1	-	-	-	-
			Total				24				25

SEMESTER VI

S.No.	Course Code	Category	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XME601	PCC	Manufacturing Technology	4	0	0	4	4	0	0	4
2.	XME602	PCC	Design of Machine Elements	3	1	0	4	3	1	0	4
3.	XME603	PEC	Professional Elective Course - II	3	0	0	3	3	0	0	3
4.		OE	Open Elective Course – II	3	0	0	3	3	0	0	3
5.	XGS605	HSMC	Professional Skills	1	0	2	3	1	0	4	5
6.	XUM606	MC	Cyber Security	0	0	0	0	3	0	0	3
7.	XME607	PCC	Machine Tools and Metrology Laboratory	0	0	1	1	0	0	2	2
8.	XME608	PCC	Tool Design and Drawing Laboratory	0	0	1	1	0	0	2	2
			Total				19				26

SEMESTER VII

S.No.	Course Code	Category	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XME701	PCC	Automation in Manufacturing	3	0	0	3	3	0	0	3
2.	XME702	PCC	Automobile Engineering and E-Vehicles	3	0	0	3	3	0	0	3
3.	XME703	PEC	Professional Elective Course - III	3	0	0	3	3	0	0	3
4.		OE	Open Elective Course – III	3	0	0	3	3	0	0	3
5.	XES705	MC	Environmental Studies	0	0	0	0	3	0	0	3
6.	XME706	PCC	CAD/CAM Laboratory	0	0	1	1	0	0	2	2
7.	XME707	PCC	Fluid Power Control and Mechatronics Laboratory	0	0	1	1	0	0	2	2
8.	XME708	PROJ	Project Work (Phase - I)	0	0	2	2	0	0	4	4
9.	XME709	PROJ	In-plant Training – III	-	-	-	2	-	-	-	-
			Total				18				23

SEMESTER VIII

S.No.	Course Code	Category	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XME801	PEC	Professional Elective courses - IV	3	0	0	3	3	0	0	3
2.		OE	Open Elective Course – IV	3	0	0	3	3	0	0	3
3.		OE	Open Elective Course – V	3	0	0	3	3	0	0	3
4.	XME804	PROJ	Project Work (Phase - II)	0	0	9	9	0	0	18	18
			Total				18				27

OPEN ELECTIVE COURSES OFFERED BY MECHANICAL ENGINEERING DEPARTMENT

S.No.	Course Code	Course Title	Credits				Hours			
			L	T	P	Total	L	T	P	Total
1.	XMEOE1	Product Design and Development	3	0	0	3	3	0	0	3
2.	XMEOE2	Renewable Energy Sources	3	0	0	3	3	0	0	3
3.	XMEOE3	Microelectromechanical Systems	3	0	0	3	3	0	0	3
4.	XMEOE4	Energy Studies	3	0	0	3	3	0	0	3

PROFESSIONAL ELECTIVE COURSES

TRACK – I (Thermal Stream)

S.No.	Course Code	Course Title	Credits				Hours			
			L	T	P	Total	L	T	P	Total
1.	XMEE01	Gas Dynamics and Shock Waves	3	0	0	3	3	0	0	3
2.	XMEE02	Computational Fluid Dynamics	3	0	0	3	3	0	0	3
3.	XMEE03	Refrigeration and Air conditioning	3	0	0	3	3	0	0	3
4.	XMEE04	Renewable Energy Sources	3	0	0	3	3	0	0	3
5.	XMEE05	Advanced I.C Engines	3	0	0	3	3	0	0	3
6.	XMEE06	Power Plant Engineering	3	0	0	3	3	0	0	3

TRACK – II (Design Stream)

S.No.	Course Code	Course Title	Credits				Hours			
			L	T	P	Total	L	T	P	Total
1.	XMEE07	Finite Element Analysis	3	0	0	3	3	0	0	3
2.	XMEE08	Design of Transmission Systems	3	0	0	3	3	0	0	3
3.	XMEE09	Mechanical Vibrations	3	0	0	3	3	0	0	3
4.	XMEE10	Design of Jigs and Fixtures and press tools	3	0	0	3	3	0	0	3
5.	XMEE11	Computer Aided Design	3	0	0	3	3	0	0	3
6.	XMEE12	Product Design and Development	3	0	0	3	3	0	0	3

TRACK – III (Manufacturing Stream)

S.No.	Course Code	Course Title	Credits				Hours			
			L	T	P	Total	L	T	P	Total
1.	XMEE13	Industrial Safety	3	0	0	3	3	0	0	3
2.	XMEE14	Computer Integrated Manufacturing	3	0	0	3	3	0	0	3
3.	XMEE15	Composite Materials	3	0	0	3	3	0	0	3
4.	XMEE16	Reliability Engineering	3	0	0	3	3	0	0	3
5.	XMEE17	Advanced Welding Technology	3	0	0	3	3	0	0	3
6.	XMEE18	Process Planning and Cost Estimation	3	0	0	3	3	0	0	3

TRACK – IV (General Stream)

S.No.	Course Code	Course Title	Credits				Hours			
			L	T	P	Total	L	T	P	Total
1.	XMEE19	Microelectromechanical Systems	3	0	0	3	3	0	0	3
2.	XMEE20	Industrial Robotics	3	0	0	3	3	0	0	3
3.	XMEE21	Automotive Electronics	3	0	0	3	3	0	0	3
4.	XMEE22	Total Quality Management	3	0	0	3	3	0	0	3
5.	XMEE23	Internet of Things and Smart Manufacturing	3	0	0	3	3	0	0	3
6.	XMEE24	Mathematical Modeling and Analysis	3	0	0	3	3	0	0	3
7.	XMEE25	Energy Conservation and Management	3	0	0	3	3	0	0	3

B.Tech. (Hons.) Mechanical Engineering with Specialization in Robotics and Industrial Automation

S.No.	Course Code	Semester	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XECHR1	III	Service Robotics with Drives and Sensors	1	0	2	3	1	0	4	5
2.	XECHR2	IV	Industrial Robotics and Automation	1	0	2	3	1	0	4	5
3.	XECHR3	V	Fundamentals of ROS and Embedded in Robotics	1	0	2	3	1	0	4	5
4.	XECHR4	V	Artificial Intelligence and Computer Vision for Robotics	1	0	2	3	1	0	4	5
5.	XECHR5	VI	Deep Learning for Robotics	1	0	2	3	1	0	4	5
6.	XECHR6	VII	Mini Project	0	0	5	5	0	0	10	10
							20				

B.Tech. (Hons.) Mechanical Engineering with Specialization in Energy Engineering

S.No.	Course Code	Semester	Course Title	Credits				Hours			
				L	T	P	Total	L	T	P	Total
1.	XMEHE1	III	Alternative Sources of Energy	3	0	0	3	3	0	0	3
2.	XMEHE2	IV	Solar and Wind Energy Systems	3	1	0	4	3	1	0	4
3.	XMEHE3	IV	Renewable Energy Laboratory – I	0	0	1	1	0	0	2	2
4.	XMEHE4	V	Energy Storage Systems and Sustainable Development	3	0	0	3	3	0	0	3
5.	XMEHE5	VI	Energy Audit, Conservation and Management	3	0	0	3	3	0	0	3
6.	XMEHE6	VI	Renewable Energy Laboratory – II	0	0	1	1	0	0	2	2
7.	XMEHE7	VII	Mini Project	0	0	5	5	0	0	10	10
							20				

B.Tech. Mechanical Engineering - Regulation 2018 Revision II**SEMESTER I**

Course Code	Category	Name of the Course	Hours per week			C
			L	T	P	
XMA101	Basic Science course	Calculus and Linear Algebra	3	1	0	4
XCP102	Engineering Science course	Programming for Problem Solving	3	0	4	5
XGS103	Humanities courses	English	2	0	2	3
XAC104	Basic Science course	Applied Chemistry for Engineers	3	1	2	5
XWP105	Engineering Science course	Workshop Practices	2	0	2	3
TOTAL						20

SEMESTER II

Course Code	Category	Name of the Course	Hours per week			C
			L	T	P	
XMA201	Basic Science course	Calculus, Ordinary Differential Equations and Complex Variable	3	1	0	4
XES202	Mandatory Courses	Environmental Sciences	3	0	0	0
XBE203	Engineering Science course	Electrical and Electronic Engineering Systems	3	2	2	5
XAP204	Basic Science course	Applied Physics for Engineers	3	1	4	6
XEG205	Engineering Science course	Engineering Graphics	2	0	2	3
TOTAL						18

SEMESTER III

Course Code	Category	Name of the Course	Hours per week			C
			L	T	P	
XME301	Basic Science Courses	PDE, Probability & Statistics	3	1	0	4
XME302	Professional Core courses	Thermodynamics	3	1	0	4
XME303	Professional Core Courses	Strength of Materials	3	1	0	4
XEM304	Engineering Science courses	Engineering Mechanics	3	1	0	4
XUM305	HSMC	Entrepreneurship Development	3	0	0	3
XME306	Professional Core courses	Manufacturing Processes	3	0	0	3
XME307	Professional Core courses	Mechanical Engineering Laboratory I (Manufacturing Technology)	0	0	1	1
XME308	Project (Summer internship)	Inplant Training – I (15 days)	0	0	2	0
TOTAL						23

SEMESTER IV

Course Code	Category	Name of the Course	Hours per week			C
			L	T	P	
XME401	Professional Core Courses	Applied Thermodynamics	3	1	0	4
XME402	Professional Core courses	Solid Mechanics	3	1	0	4
XUM403	Mandatory Courses	Human Ethics, Values, Rights and Gender Equality	3	0	0	0
XME404	Professional Core Courses	Fluid Mechanics & Fluid Machines	3	1	0	4
XME405	Engineering Science Courses	Materials Engineering	3	0	0	3
XME406	Professional Core courses	Instrumentation & Control	3	1	0	4
XME407	Professional Core courses	Mechanical Engineering Laboratory II (Thermal Engineering and Fluid Mechanics)	0	0	1	1
TOTAL						20

SEMESTER V

Course Code	Category	Name of the Course	Hours per week			C
			L	T	P	
XME501	Humanities courses	Operations Research	3	1	0	4
XME502	Professional Core courses	Heat Transfer	3	1	0	4
XME503	Professional Core courses	Automobile Engineering	3	0	0	3
XME504	Professional Core courses	CAD/CAM	3	0	0	3
XME505	Professional Core courses	Kinematics & Theory of Machines	3	1	0	4
XUM506	Mandatory course	Constitution of India	2	0	0	0
XME507	Professional Core courses	Mechanical Engineering Laboratory III (Strength of Materials)	0	0	1	1
XME508	Professional Core courses	Mechanical Engineering Laboratory IV (Kinematics and Theory of Machines)	0	0	1	1
XME509	Project (Summer internship)	Inplant Training – II (21 days)	0	0	2	0
XMEM01	Minor Course	CNC Programming for Lathe Operations	0	0	2	0
		TOTAL				20

SEMESTER VI

Course Code	Category	Name of the Course	Hours per week			C
			L	T	P	
XUM601	Humanities and Social Sciences	Economics for Engineers	3	0	0	3
XME602	Professional Core courses	Manufacturing Technology	4	0	0	4
XME603	Professional Core courses	Design of Machine Elements	3	1	0	4
	Professional Elective courses	Elective - I	3	0	0	3
	Professional Elective courses	Elective - II	3	0	0	3
XME606	Professional Core courses	Mechanical Engineering Laboratory V (Heat Transfer)	0	0	1	1
XMEM02	Minor Course	Pneumatics and Hydraulics	0	0	2	0
		TOTAL				18

SEMESTER VII

Course Code	Category	Name of the Course	Hours per week			C
			L	T	P	
	Open Elective Courses	Open Elective - I	3	0	0	3
XME702	Professional Core courses	Automation in Manufacturing	3	0	0	3
	Professional Elective Courses	Elective - III	3	0	0	3
	Professional Elective Courses	Elective - IV	3	0	0	3
	Professional Elective Courses	Elective - V	3	0	0	3
XUM706	UGC- MC	Cyber Security	3	0	0	0
XME707	Professional Core courses	Mechanical Engineering Laboratory VI (Special Machines)	0	0	1	1
XME708	Project	Project phase – I	0	0	8	4
XME709	Project (Summer internship)	Inplant Training – III (30 days)	0	0	4	2
XMEM03	Minor Course	Non Destructive Testing	0	0	2	0
		TOTAL				22

SEMESTER VIII

Course Code	Category	Name of the Course	Hours per week			C
			L	T	P	
	Open Elective Courses	Open Elective-II	3	0	0	3
	Open Elective Courses	Open Elective-III	3	0	0	3
	Professional Elective Courses	Elective VI	3	0	0	3
XME804	Project	Project phase – II	0	0	12	6
		TOTAL				15

MINOR COURSES

Course Code	Name of the Course	Hours per week			C
		L	T	P	
XMEM01	CNC Programming for Lathe Operations	0	0	2	0
XMEM02	Pneumatics and Hydraulics	0	0	2	0
XMEM03	Non Destructive Testing	0	0	2	0

OPEN ELECTIVE COURSES OFFERED BY MECHANICAL ENGINEERING DEPARTMENT

Course Code	Name of the Course	Hours per week			C
		L	T	P	
XMEOE1	Product Design and Development	3	0	0	3
XMEOE2	Renewable Energy Sources	3	0	0	3
XMEOE3	Microelectromechanical Systems	3	0	0	3

PROFESSIONAL ELECTIVE COURSES

Course Code	Course Title	Hours per week			C
		L	T	P	
TRACK – I (Thermal Stream)					
XMEE01	Gas Dynamics and Shock Waves	3	0	0	3
XMEE02	Power Plant Engineering	3	0	0	3
XMEE03	Refrigeration and Air conditioning	3	0	0	3
XMEE04	Renewable Energy Sources	3	0	0	3
XMEE05	Advanced I.C Engines	3	0	0	3
XMEE06	Energy Conservation and Management	3	0	0	3
TRACK – II (Design Stream)					
XMEE07	Finite Element Analysis	3	0	0	3
XMEE08	Design of Transmission Systems	3	0	0	3
XMEE09	Mechanical Vibrations	3	0	0	3
XMEE10	Computational Fluid Dynamics	3	0	0	3
XMEE11	Machine Drawing	3	0	0	3
XMEE12	Design of Jigs and Fixtures and press tools	3	0	0	3
XMEE13	Mathematical Modeling and Analysis	3	0	0	3
XMEE14	Computer Aided Design	3	0	0	3
TRACK – III (Manufacturing Stream)					
XMEE15	Unconventional Manufacturing Technology	3	0	0	3

XMEE16	Microelectromechanical Systems	3	0	0	3
XMEE17	Industrial Safety	3	0	0	3
XMEE18	Industrial Robotics	3	0	0	3
XMEE19	Total Quality Management	3	0	0	3
XMEE20	Product Design and Development	3	0	0	3
XMEE21	Computer Integrated Manufacturing	3	0	0	3
XMEE22	Process Planning and Cost Estimation	3	0	0	3
XMEE23	Composite Materials	3	0	0	3
XMEE24	Automotive Electronics	3	0	0	3
XMEE25	Reliability Engineering	3	0	0	3