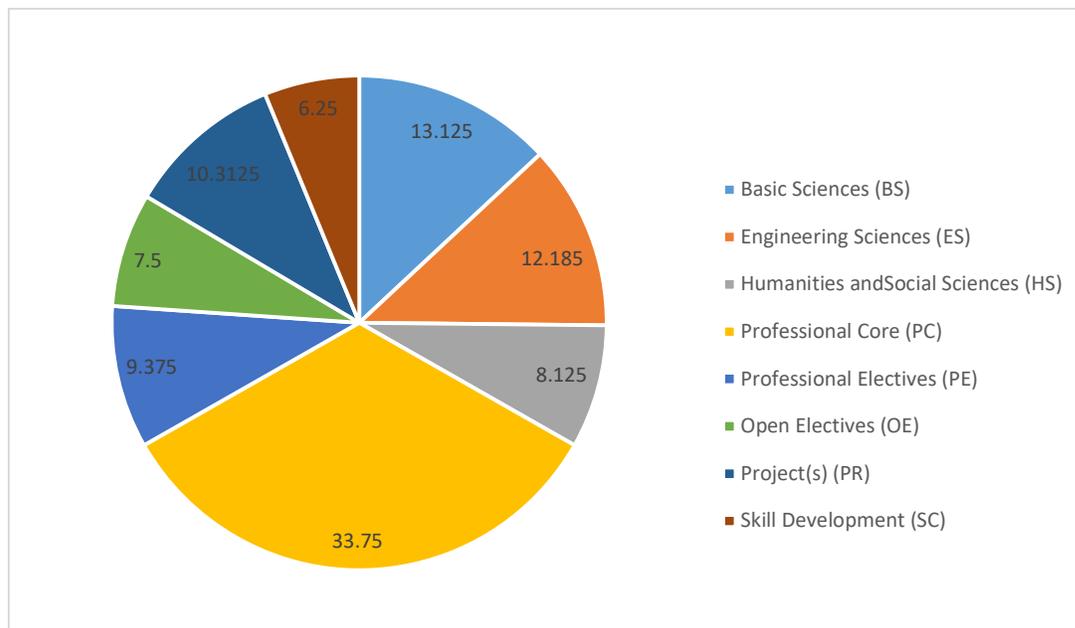


DEPARTMENT OF MECHANICAL ENGINEERING

B.TECH. MECHANICAL ENGINEERING

Program curriculum grouping based on course components

Course Component	Curriculum Content (% of total number of credits program)	Credits as per AICTE	Total number of credits
Basic Sciences (BS)	13.125	25	21
Engineering Sciences (ES)	12.185	24	19.5
Humanities and Social Sciences (HS)	8.125	12	12
Professional Core (PC)	33.75	48	54
Professional Electives (PE)	9.375	18	15
Open Electives (OE)	7.5	18	12
Project(s) (PR)	10.3125	15	16.5
Skill Development (SC)	6.25	--	10
Mandatory Course(s) (MC)	--	--	--
Total number of Credits		160	160



B.TECH. MECHANICAL ENGINEERING

(w.e.f. the batch of students admitted from the academic year 2020-2021)

Three Weeks Orientation Programme is Mandatory before starting Semester I [First Year]

Semester I [First Year]

COURSESTRUCTURE

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	ME 111	Mathematics-I	2	1	-	30	70	3	BS
2	ME 112	Engineering Chemistry	2	1	-	30	70	3	BS
3	ME113	English for Communication Skills	3	-	-	30	70	3	HS
4	ME 114	Programming For Problem Solving	3	-	-	30	70	3	ES
5	ME 151	Chemistry Lab	-	-	3	30	70	1.5	BS
6	ME152	English Language Communication Skills Lab	-	-	3	30	70	1.5	HS
7	ME 153	Engineering Workshop Practice Lab	1	-	4	30	70	3	ES
8	ME 154	Programming for Problem Solving Lab			3	30	70	1.5	ES
9	MEMC1	Environmental Science	2	-	-	100	-	-	MC
10		Three Weeks Orientation Programme	-	-	-	-	-	-	
TOTAL			13	2	13	340	560	19.5	TPW-28

Semester II [First Year]

COURSESTRUCTURE

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	ME 121	Mathematics-II	2	1	-	30	70	3	BS
2	ME122	Engineering Physics	3	-	-	30	70	3	BS
3	ME 123	Basic Electrical and Electronics Engineering	2	1	-	30	70	3	ES
4	ME124	Engineering Mechanics	2	1	-	30	70	3	ES
5	ME125	Engineering Graphics	1	-	4	30	70	3	ES
6	ME161	Physics Lab	-	-	3	30	70	1.5	BS
7	ME 162	Computer Aided Geometrical Modeling Lab	-	-	3	30	70	1.5	ES
8	ME163	Basic Electrical and Electronics Engineering Lab	-	-	3	30	70	1.5	ES
9	MEMC2	Constitution of India	2	-	-	100	-	-	MC
TOTAL			12	3	13	340	560	19.5	TPW-28

Semester III [Second Year]
COURSE STRUCTURE

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	ME 211	Operations Management	2	1	-	30	70	3	PC
2	ME 212	Material Science & Metallurgy	3	-	-	30	70	3	BS
3	ME 213	Manufacturing Processes	3	-	-	30	70	3	PC
4	ME214	Basic Thermodynamics	2	1	-	30	70	3	PC
5	ME 215	Theory of Mechanisms & Machines	2	1	-	30	70	3	PC
6	ME 251	Machine Drawing Lab	-	-	3	30	70	1.5	PC
7	ME 252	Modeling Lab	-	-	3	30	70	1.5	PC
8	ME 253	Advanced programming lab	-	-	3	30	70	1.5	ES
9	MESL1	Skill Oriented Course -I	1	-	2	100	-	2	SC
10	MEMC3	Professional Ethics & Human values	2	-	-	100	-	-	MC
TOTAL			15	3	11	440	560	21.5	TPW-29

Semester IV [Second Year]
COURSE STRUCTURE

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	ME 221	Mathematics - III (PDE, Probability & Statistics)	2	1	-	30	70	3	BS
2	ME 222	Applied Thermodynamics	2	1	-	30	70	3	PC
3	ME 223	Strength of materials	3	-	-	30	70	3	PC
4	ME 224	Manufacturing Technology	3	-	-	30	70	3	PC
5	ME 225	Fluid Mechanics & Hydraulic Machines	2	1	-	30	70	3	PC
6	ME 261	Manufacturing Process Lab	-	-	3	30	70	1.5	PC
7	ME 262	FM & SM Lab	-	-	3	30	70	1.5	PC
8	ME 263	Communicative English Lab	-	-	3	30	70	1.5	HS
9	MESL2	Skill Oriented Course: II	1	-	2	100	-	2	SC
10	MEMC4	Design Thinking & Product Innovation	2	-	-	100	-	-	MC
TOTAL			15	3	11	440	560	21.5	TPW-29
Internship 3 to 4 weeks (minimum 3 weeks-Mandatory) during summer vacation (to be evaluated during next semester)									
Honors/Minor course (Maximum Two courses can be registered)			4	-	-	30	70	4	HR/MR

Semester V [Third Year]
COURSE STRUCTURE

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	ME 311	Design of Machine Elements	2	1	-	30	70	3	PC
2	ME 312	Metrology & Measurements	2	1	-	30	70	3	PC
3	ME 313	Machine Dynamics and Vibrations	2	1	-	30	70	3	PC
4	ME 314	Professional Elective-I	3	-	-	30	70	3	OE
5	ME 315	Open / Job-Oriented Elective-I	2	-	2	30	70	3	PE
6	ME 351	CAM Lab	-	-	3	30	70	1.5	PC
7	ME 352	Thermal Engineering Lab	-	-	3	30	70	1.5	PC
8	ME 353	Summer Internship	-	-	-	100	-	1.5	PR
9	MESL3	Skill Oriented Course: III	1	-	2	100	-	2	SC
TOTAL			12	3	10	410	490	21.5	TPW-25
Honors/Minor course (Maximum Two courses can be registered)			4	-	-	30	70	4	HR/MR

Semester VI [Third Year]

COURSE STRUCTURE

SNo.	Course Details		Scheme of Instruction			Scheme of Examination		Category Code	
	Code No.	Subject Name	Periods per week			Maximum Marks	Credits		
			L	T	P	SES			EXT
1	ME 321	Design of Transmission Elements	2	1	-	30	70	3	PC
2	ME 322	Operations Research	3	-	-	30	70	3	PC
3	ME 323	Heat Transfer	2	1	-	30	70	3	PC
4	ME 324	Professional Elective-II	3	-	-	30	70	3	PE
5	ME 325	Open / Job-Oriented Elective-II	2	-	2	30	70	3	OE
6	ME 361	Design & Metrology Lab	-	-	3	30	70	1.5	OE
7	ME 362	Heat Transfer Lab	-	-	3	30	70	1.5	PC
8	ME 363	Analysis Lab	-	-	3	30	70	1.5	PC
9	MESL4	Skill Oriented Course: IV	1	-	2	100		2	SC
TOTAL			13	2	13	370	530	21.5	TPW-28
Internship 6 to 8 weeks (minimum 6 weeks-Mandatory) during summer vacation (to be evaluated during next semester)									
Honors/Minor course (Maximum Two courses can be registered)			4	-	-	30	70	4	HR/MR

Semester VII [Fourth Year]

COURSE STRUCTURE

SNo.	Course Details		Scheme of Instruction			Scheme of Examination		Category Code	
	Code No.	Subject Name	Periods per week			Maximum Marks	Credits		
			L	T	P	SES			EXT
1	ME 411	Humanities Elective	3	-	-	30	70	3	HS
2	ME 412	Professional Elective-III	3	-	-	30	70	3	PE
3	ME 413	Professional Elective-IV	3	-	-	30	70	3	PE
4	ME 414	Professional Elective-V [MOOCS]	-	-	-	30	70	3	PE
5	ME 415	Open / Job-Oriented Elective-III	2	-	2	30	70	3	OE
6	ME 416	Open / Job-Oriented Elective-IV [MOOCS]	-	-	-	30	70	3	OE
7	ME 451	Internship / Certification	-	-	-	100		3	PR
8	MESL5	Skill Oriented Course: V	1	-	2	100		2	SC
TOTAL			12	0	4	380	420	23	TPW-16
Honors/Minor course (Maximum Two courses can be registered)			4	-	-	30	70	4	HR/MR

Semester VIII [Fourth Year]

COURSE STRUCTURE

SNo.	Course Details		Scheme of Instruction			Scheme of Examination		Category Code	
	Code No.	Subject Name	Periods per week			Maximum Marks	Credits		
			L	T	P	SES			EXT
1	ME461	Project Work, Seminar and Internship in Industry	-	-	-	30	70	12	PR
TOTAL			0	0	0	30	70	12	TPW-0

Professional Elective Courses

Code No.	Subject Name	Code No.	Subject Name
MEEL1	Computer Aided Design	MEEL3	Mechatronic System Design
MEEL2	Finite element Methods	MEEL4	Fluidics and control systems
MEEL5	Industrial Robotics	MEEL6	I C Engines and Gas Turbines
MEEL7	Refrigeration and Air Conditioning	MEEL8	Automobile Engineering
MEEL9	Elements of Aerospace Engineering	MEEL10	Power Plant Engineering
MEEL11	Energy Conservation & Management	MEEL12	Automation in Manufacturing
MEEL13	Composite Materials	MEEL14	Advanced Metal Casting
MEEL15	Safety in Engineering Industry	MEEL16	Maintenance Engineering
MEEL17	Product Lifecycle Management	MEEL18	Industrial Management
MEEL19	Process Planning and Cost Estimation	MEEL20	Total Quality Management

Design	Thermal	Production	Industrial
MEEL1 Computer Aided Design	MEEL6 I C Engines and Gas Turbines	MEEL12 Automation in Manufacturing	MEEL17 Product Lifecycle Management
MEEL2 Finite element Methods	MEEL7 Refrigeration and Air Conditioning	MEEL13 Composite Materials	MEEL18 Industrial Management
MEEL3 Mechatronic System Design MEEL4 Fluidics and control systems	MEEL8 Automobile Engineering MEEL9 Elements of Aerospace Engineering	MEEL14 Advanced Metal Casting	MEEL19 Process Planning and Cost Estimation
MEEL5 Industrial Robotics	MEEL10 Power Plant Engineering MEEL11 Energy Conservation & Management	MEEL15 Safety in Engineering Industry MEEL16 Maintenance Engineering	MEEL20 Total Quality Management

Skill Courses

Code No.	Subject Name	Code No.	Subject Name
MESL1	Data Structures & Algorithms	MESL2	Numerical Techniques & Simulation
MESL3	Soft Skills	MESL4	Advanced Modelling Lab
MESL5	Automation Lab		

Open Elective Courses (Offered by other Departments)

Code No.	Subject Name	Code No.	Subject Name
CEOL1	Basic Surveying	CEOL2	Building Materials and Construction
CHOL1	Energy Engineering	CHOL2	Solid Waste Management
CSOL1	Programming with Java	CSOL2	Relational Database Management Systems
CBOL1	Operating Systems Concepts	CBOL2	Business Analytics
CMOL1	Fundamentals of Artificial Intelligence	CMOL2	Programming with C++
CDOL1	Python for Data Science	CDOL2	Data Science for Engineers
COOL1	Architecting Smart IoT Devices	COOL2	Fog Computing
ECOL1	Applied Electronics	ECOL2	Microprocessors & Interfacing
ECOL3	Linear ICs and Applications	EEOL1	Renewable Energy Sources
EEOL2	Utilization of Electrical Energy	ITOL1	Data Structures & Algorithms
ITOL2	Web Technologies		

Elective Courses offered by Science & Humanities Department

Code No.	Subject Name	Code No.	Subject Name
HSEL1	Industrial Management & Entrepreneurship	HSEL2	Economics for Engineers
HSEL3	Introduction to Industrial Management	HSEL4	Project Management & Entrepreneurship

Job Oriented Elective Courses

Course Code	Course Name	Course Code	Course Name
JOEL01	Big Data Processing	JOEL12	Building Planning
JOEL02	Full Stack Development	JOEL13	Quantity Estimation
JOEL03	JavaScript Technologies	JOEL14	Bio Fuels
JOEL04	Cloud Computing using AWS	JOEL15	Environmental Engineering
JOEL05	DevOps	JOEL16	Safety Management
JOEL06	Enterprise Programming	JOEL17	Non-Conventional Energy Engineering
JOEL07	Predictive Modeling and Analysis	JOEL18	Biopharmaceutics and Drug Design
JOEL08	Data warehousing and mining	JOEL19	Embedded Systems-1
JOEL09	Interface and Programming With IoT Gateway	JOEL20	Embedded Systems-2
JOEL10	IoT Cloud and Data Analytics	JOEL21	Open Source Systems
JOEL11	Geospatial Technology	JOEL22	Machine Learning

HONORS COURSES

Course Code	COURSE NAME	L-T-P	CR	PRE-REQ.
POOL1 Design 				
MEH11	Advanced Strength of Materials	3-1-0	4	Strength of Materials
MEH12	Fracture Mechanics	3-1-0	4	Strength of Materials, Metallurgy
MEH13	Design of Manufacturing & Assembly	3-1-0	4	Strength of Materials
MEH14	Advanced Optimization Techniques	3-1-0	4	Dynamics of machinery
POOL2 Production 				
MEH21	Advanced Materials & Processing	4-0-0	4	Manufacturing Process
MEH22	Computer Integrated Manufacturing & Automation	4-0-0	4	Manufacturing Technology
MEH23	Non Traditional Machining	4-0-0	4	Manufacturing Technology
MEH24	Additive Manufacturing	4-0-0	4	Manufacturing Processes & Manufacturing Technology
POOL3 Thermal 				
MEH31	Computational Fluid Dynamics	3-1-0	4	Fluid Mechanics
MEH32	Gas Dynamics & Jet Propulsion	3-1-0	4	Basic Thermodynamics
MEH33	Alternate Fuels & Energy Systems	3-1-0	4	Basic Thermodynamics, I.C Engines
MEH34	Advanced IC Engines	3-1-0	4	IC Engines
POOL4 Industrial 				
MEH41	Design of Experiments	3-1-0	4	Mathematics-III
MEH42	Production Planning & Control	3-1-0	4	Industrial Engineering
MEH43	Supply Chain Management & Logistics	4-0-0	4	Industrial Engineering
MEH44	Quality Control & Reliability	4-0-0	4	Industrial Engineering

Note:

1. Students has to acquire 16 credits with minimum one subject from each pool. (04 courses@4 credits each)
2. Compulsory MOOC/NPTEL Courses for 04 credits (02 courses@ 2 credits each)

General Minor Courses (Offered by other Department)

- Note: 1. A student can opt any 4 subjects from each pool @ 4 credits per subject.
2. Compulsory MOOC/NPTEL Courses for 04 credits (02 courses@ 2 credits each)

Offered by Civil Engineering

Code No.	Subject Name	Code No.	Subject Name
CEMR1	Geomatics (Survey, GIS & GPS)	CEMR2	Construction Engineering & Management
CEMR3	Fundamentals of Structural Engineering	CEMR4	Water Resource Engineering
CEMR5	Environmental Engineering	CEMR6	Geotechnical Engineering
CEMR7	Transportation Engineering		

Offered by Chemical Engineering

Code No.	Subject Name	Code No.	Subject Name
CHMR1	Unit Operations	CHMR2	Principles of Chemical Process Calculations
CHMR3	Transfer operations	CHMR4	Reaction Engineering
CHMR5	Industrial Pollution Control Engineering	CHMR6	Principles of Safety Management

Offered by Computer Science & Engineering

Code No.	Subject Name	Code No.	Subject Name
CSMR1	Fundamentals of Data Structures	CSMR2	Computer Organization and Architecture
CSMR3	Operating System Concepts	CSMR4	Relational DataBase Management System
CSMR5	Programming with JAVA	CSMR6	Introduction to Algorithms
CSMR7	Principles of Software Engineering	CSMR8	Computer Networking Concepts

Offered by Computer Science & Engineering (DS)

Code No.	Subject Name	Code No.	Subject Name
CDMR1	Introduction to Data Science & Machine Learning	CDMR2	Analysing, Visualizing and Applying Data Science with Python
CDMR3	Web Data Mining	CDMR4	Business Analytics
CDMR5	Data Science for Engineers	CDMR6	Deep Learning

Offered by Computer Science & Engineering (AIML)

Code No.	Subject Name	Code No.	Subject Name
CMMR1	Introduction to Artificial Intelligence	CMMR2	Machine Learning
CMMR3	Data Analytics	CMMR4	Deep Learning
CMMR5	Natural Language Processing	CMMR6	Soft Computing

Offered by Computer Science & Engineering (IoT)

Code No.	Subject Name	Code No.	Subject Name
COMR1	Introduction to Internet of Things	COMR2	IoT Architecture and Protocols
COMR3	IoT Cloud and Data Analytics	COMR4	Smart Sensor Technologies
COMR5	Fundamental of IoT	COMR6	Introduction of Raspberry Pi and Arduino

Offered by Information Technology

Code No.	Subject Name	Code No.	Subject Name
ITMR1	Database Management Systems	ITMR2	Unix and Shell Programming
ITMR3	Computer Networks	ITMR4	Software Engineering
ITMR5	Cryptography and Network Security	ITMR6	Machine Learning

General Minor Courses (Offered by other Department)

- Note : 1. A student can opt any 4 subjects from each pool @ 4 credits per subject.
2. Compulsory MOOC/NPTEL Courses for 04 credits (02 courses@ 2 credits each)

Offered by Electrical & Electronics Engineering

Code No.	Subject Name	Code No.	Subject Name
EEMR1	Electrical Machines Theory & Performance	EEMR2	Electrical Power Generation & Utilization
EEMR3	Power Systems Engineering	EEMR4	Power Converters & Applications
EEMR5	Electrical Measurements & Instrumentation	EEMR6	Electric Vehicles

Offered by Mechanical Engineering

Code No.	Subject Name	Code No.	Subject Name
MEMR1	Engineering Mechanics	MEMR2	Strength of Materials and Fluid mechanics
MEMR3	Manufacturing Processes	MEMR4	Concepts of Thermal Engineering
MEMR5	Concepts of Mechanical Design	MEMR6	Computer Aided Design & Manufacturing
MEMR7	Additive Manufacturing		

Industry Track - Minor Courses

- Note : 1. A student can opt any 4 subjects from each Track @ 4 credits per subject.
2. Compulsory MOOC/NPTEL Courses for 04 credits (02 courses@ 2 credits each)

Minor in Industrial Automation & Robotics (Offered by Mechanical Engineering)

Code No.	Subject Name	Code No.	Subject Name
ARMR1	Robotic Engineering	ARMR2	Mechatronics and Microcontrollers
ARMR3	Industrial Automation	ARMR4	Computer integrated Manufacturing
ARMR5	Fluidics and Control Systems	ARMR6	Mechanics of Robots

Minor in Full Stack Development (Offered by Computer Science & Business Systems)

Code No.	Subject Name	Code No.	Subject Name
FSMR1	User Interface Design	FSMR2	Client Side Scripting
FSMR3	React JS	FSMR4	MEAN stack (MongoDB, Express JS, Angular JS, Node JS)
FSMR5	C# (.NET Framework)	FSMR6	Web Application Development Using ASP

Minor in Cloud Computing (Offered by Computer Science & Engineering - Data Science)

Code No.	Subject Name	Code No.	Subject Name
CCMR1	Principals of Cloud Computing	CCMR2	Cloud Virtualization
CCMR3	Cloud Application Development	CCMR4	Cloud Security
CCMR5	Edge Computing	CCMR6	Block Chain Security

Minor in VLSI (Offered by Electronics & Communication Engineering)

Code No.	Subject Name	Code No.	Subject Name
VLMR1	HDL Programming	VLMR2	System Verilog and UVM
VLMR3	Synthesis and Formal Verification	VLMR4	Design for Testability
VLMR5	Physical Design Fundamentals	VLMR6	Advanced Physical Design

Minor in Electric Vehicles (Offered by Electrical & Electronics Engineering)

Code No.	Subject Name	Code No.	Subject Name
EVMR1	Energy Systems and Electrical Machines	EVMR2	Hybrid Electric Vehicles
EVMR3	Plug-in Electric vehicles	EVMR4	Electric Vehicle Power Train
EVMR5	Autotronics	EVMR6	BMS & Charging stations