

**B.Tech. (Mechanical Engineering) - 2019 Batch
(Revised Course Components and Curriculum)**

PROGRAMME STRUCTURE

S. No	Course Component (Mechanical engineering)		Credits
1	Basic Science courses	BSC	24
2	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	ESC	20
3	Humanities and Social Sciences including Management courses	HSMC	8
4	Professional Core Courses	PCC	60
5	Professional Elective Courses relevant to chosen specialization/branch	PEC	18
6	Open subjects- Electives from other technical and /or emerging courses	OEC	18
7	Project work, seminar and internship in industry, or appropriate workplace/academic and research institutions in India/abroad.	P	12
8	Mandatory Courses [environment studies, induction programme, Indian constitution, value education etc.]	MC	0
Total Credits			160

REVISED COURSE COMPONENTS AND CURRICULUM

Basic Science Courses							
S. No	Code No.	Subject	Hours per week			Credits	Semester
			L	T	P		
1	19PH1009	Engineering Physics - Electromagnetics, Optics and Properties of Matter	3	0	3	3	II
2	19PH1010	Engineering Physics - Electromagnetics, Optics and Properties of Matter Lab	0	0	2	1	II
3	19CH1003	Chemistry for Mechanical Engineering	3	0	0	3	I
4	19CH1007	Applied Chemistry Laboratory	0	0	2	1	I
5	19MA1001	Calculus and Linear Algebra	3	0	2	4	I
6	19MA1008	Ordinary Differential Equations and Complex variables	3	0	2	4	II
7	19MA2001	Partial Differential Equations, Probability and Statistics	3	0	2	4	III
8	19MA2010	Numerical Mathematics and Computing	3	0	2	4	IV
Total Credits						24	
Engineering Science Courses							
S. No	Code No.	Subject	Hours per week			Credits	Semester
			L	T	P		

1	18ME1001	Engineering Drawing	0	0	4	2	I
2	18ME1002	Engineering Graphics (AutoCAD)	0	0	2	1	II
3	18CS1004	Programming for Problem Solving	3	0	0	3	I
4	18CS1003	Fundamentals of Computer Programming Lab.	0	0	2	1	I
5	19ME1003	Engineering Mechanics	3	0	0	3	II
6	19ME1004	Manufacturing Process Laboratory	0	0	2	1	II
7	19EC1003	Basic Principles of Electrical and Electronics Engineering	3	0	0	3	II
8	19EC1002	Fundamentals of Electrical and Electronics Laboratory	0	0	2	1	II
9	18ME2033	Engineering Design Laboratory (CAE)	0	0	4	2	VI
10	19CS1001	Programming in Python	3	0	0	3	II
Total Credits						20	

Humanities & Social Sciences Including Management Courses(HSMC)							
S. No	Code No.	Subject	Hours per week			Credits	Semester
			L	T	P		
1	18EN1001	English	2	0	0	2	I
2	18EN1002	English Language Laboratory	0	0	2	1	I
3	18MS2010	Engineering Economics	3	0	0	3	VII
4	19LN1001	German Language	2	0	0	2	I
Total Credits						8	

PROFESSIONAL CORE COURSES (PCC)							
S. No	Code No.	Subject	Hours per week			Credits	Sem.
			L	T	P		
1	18ME2009	Fluid Mechanics Laboratory	0	0	2	1	III
2	18ME2010	Heat and Mass Transfer	3	0	0	3	V
3	18ME2011	Heat Transfer Laboratory	0	0	4	2	V
4	18ME2012	Strength of Materials	3	0	0	3	III
5	18ME2013	Strength of Materials Laboratory	0	0	2	1	III
6	18ME2014	Solid Mechanics	3	0	0	3	IV
7	18ME2015	Kinematics and Theory of Machines	3	1	0	4	IV
8	18ME2016	Design of Machine Elements	3	0	0	3	IV
9	18ME2017	Design of Transmission Systems	3	0	0	3	V
10	18ME2018	Dynamics Laboratory	0	0	2	1	IV
11	18ME2020	Manufacturing Processes	3	0	0	3	V
12	18ME2022	Manufacturing Technology	3	0	0	3	III
13	18ME2024	Computer Aided Manufacturing Laboratory	0	0	2	1	V
14	18ME2025	Materials Engineering	3	0	0	3	IV
15	18ME2038	Thermal Engineering Laboratory	0	0	2	1	IV
16	18ME2039	Fluid Mechanics and Fluid Machines	3	1	0	4	III

17	18ME2050	Finite Element Analysis	3	0	0	3	V
18	18EI2009	Instrumentation and Control	3	0	0	3	V
19	18EI2010	Instrumentation and Control Laboratory	0	0	2	1	V
20	19ME1001	Industrial Practice – I (Fundamentals of Chassis Design and Fabrication of Go-Kart)	0	0	2	1	I
21	19ME1002	Industrial Practice - II (Suspension and Steering Dynamics)	0	0	1	0.5	II
22	19ME2001	Industrial Practice - III (Design and Fabrication of All Terrain Vehicle)	0	0	1	0.5	III
23	19ME2002	Industrial Practice - IV (Smart Engine, Transmission Technologies and Brake Dynamics)	0	0	1	0.5	IV
24	19ME2003	Industrial Practice - V (Testing and Tuning of Engine and Transmission Systems)	0	0	1	0.5	V
25	19ME2004	Industrial Practice - VI (Fundamentals of Design for Electric and Hybrid Vehicles)	0	0	1	0.5	VI
26	19ME2005	Industrial Practice - VII (Fabrication Technology for Electric and Hybrid Vehicles)	0	0	1	0.5	VII
27	19ME2021	Manufacturing Technology Laboratory	0	0	2	1	III
28	19ME2022	Computer Aided Modelling and Assembling Laboratory	0	0	2	1	V
29	19ME2023	Mechatronics and Additive Manufacturing Laboratory	0	0	2	1	VI
30	19ME2024	Metallurgy and Metrology Laboratory	0	0	2	1	III
31	19ME2025	Thermodynamics	3	0	0	3	III
32	19ME2026	Applied Thermodynamics	3	0	0	3	IV
Total Credits						60	

PROFESSIONAL ELECTIVE COURSES (PEC)							
S. No	Code No.	Subject	Hours per week			Credits	Sem.
			L	T	P		
1	18ME2034	Operations Research	3	0	0	3	VI
2	18ME2040	Computational Fluid Dynamics	3	0	0	3	VI
3	18ME2041	Turbomachinery	3	0	0	3	VI
4	18ME2042	Design of Heat Exchangers	3	0	0	3	VI
5	18ME2043	Internal Combustion Engines	3	0	0	3	VI
6	18ME2044	Refrigeration and Air Conditioning	3	0	0	3	VI
7	18ME2045	Gas Dynamics and Jet Propulsion	3	0	0	3	VI
8	18ME2046	Solar Thermal Power Engineering	3	0	0	3	VI
9	18ME2047	Power Plant Engineering	3	0	0	3	VI
10	18ME2048	Product Design and Development Strategies	3	0	0	3	VI
11	18ME2049	Composite Materials	3	0	0	3	VI
12	18ME2051	Principles of Mechanical Vibrations	3	0	0	3	VI
13	18ME2052	Design for Manufacture	3	0	0	3	VI
14	18ME2053	Tribology	3	0	0	3	VI
15	18ME2054	Design of Jigs, Fixtures and Press Tools	3	0	0	3	VI
16	18ME2055	Computer Aided Design	3	0	0	3	VI

17	18ME2056	Micro and Nano Machining	3	0	0	3	VI
18	18ME2057	Welding Technology	3	0	0	3	VI
19	18ME2058	Mechatronic systems	3	0	0	3	VI
20	18ME2059	Metal Cutting Theory and Practice	3	0	0	3	VI
21	18ME2060	Industrial Safety Engineering	3	0	0	3	VI
22	18ME2061	Industrial Engineering	3	0	0	3	VI
23	18ME2062	Modern Vehicle Technology	3	0	0	3	VI
24	18ME2063	Rapid Manufacturing Technologies	3	0	0	3	VI
25	18ME2064	Automation in manufacturing	3	0	0	3	VI
26	18ME2065	Process Planning and Cost Estimation	3	0	0	3	VI
27	18ME2066	Microprocessors in Automation	3	0	0	3	VI
28	18ME2067	Automobile Engineering	3	0	0	3	VI
29	18ME2068	Total Quality Management	3	0	0	3	VI
30	18ME2069	Energy Conservation and Management	3	0	0	3	VI
31	18ME2080	Introduction to Food Process Engineering and Technology	3	0	0	3	VI
32	18ME2081	Introduction to Modern Energy Technologies	3	0	0	3	VI
33	18ME2082	Introduction to Water Technologies	3	0	0	3	VI
34	18ME2083	Introduction to Health Care Science and Technology	3	0	0	3	VI
35	19ME2018	Robotics and Automation	3	0	0	3	VI
36	19ME2019	Actuators for Automation	3	0	0	3	VI
37	19ME2020	Drone Technology	3	0	0	3	VI
38	19EC2062	Internet of Things for Mechanical Systems	3	0	0	3	VI
39	19EC2063	Sensor Technology for Mechanical Systems	3	0	0	3	VII
40	19CS2010	Artificial Intelligence for Mechanical Systems	3	0	0	3	VII
41	19CS2011	Machine Learning and Data Analytics for Mechanical Systems	3	0	0	3	VII
							Out of
Total Credits						18	123

OPEN ELECTIVE COURSES (OEC)							
S. No	Code No.	Subject	Hours per week			Credits	Semester
			L	T	P		
1	18ME2070	Introduction to Mechatronics	3	0	0	3	VII
2	18ME2071	Robotic Engineering	3	0	0	3	VII
3	18ME2072	Fluid Power Applications	3	0	0	3	VII
4	18ME2073	Modern Manufacturing Techniques	3	0	0	3	VII
5	18ME2074	Renewable Energy Technologies	3	0	0	3	VII
6	18ME2075	Introduction to IC Engines	3	0	0	3	VII
7	18ME2076	Fundamentals of Computer Aided Design	3	0	0	3	VII
8	18ME2077	Fuel Cells Technology	3	0	0	3	VII
9	18ME2078	Experimental Methods in Engineering	3	0	0	3	VII
10	18ME2079	MEMS and Micro System Fabrication	3	0	0	3	VII
Total Credits						18	30

PROJECT (P)							
S. No	Code No.	Subject	Hours per week			Credits	Semester
			L	T	P		
1	ITP2921/ ISP2921	Industrial training / Internship	15 Days			1	V

2	ITP2922/ ISP2922	Industrial training / Internship	15 Days			1	VII
3	19ME2999	Project	-	-	-	10	VIII
Total Credits						12	
MANDATORY COURSES (MC)							
S. No	Code No.	Subject	Hours per week			Credits	Semester
			L	T	P		
1	18CH2001	Environmental Studies	2	0	0	0	IV
2	18MS2014	Constitution of India	2	0	0	0	V