

1.3.2 Number of Value-added courses imparting transferable and life Skills

Department of Mechanical Engineering

INDEX

S.No.	Description of the Document	Page No
1	CC & EC Activities - II	1
2	CC & EC Activities - I	7

Department of Mechanical Engineering

Minimum Credits to be Earned: 164 (for Regular Students)

131 (for Lateral Entry Students)

First Semester							
No.	Course Code	Course	POs	Contact Hours			
				L	T	P	C
1	19HSX01	Communicative English	10,12	3	1	-	3
2	19MAX01	Engineering Mathematics I	1,12	3	1	-	3
3	19PYX01 19CYX01	Engineering Physics / Engineering Chemistry	1,12/ 1,12	3	1	-	3
4	19BEX01 19BEX02	Basics of Engineering / Problem Solving and Programming Skills	1,12/ 1,12	3	1	-	3
5	19BEX03 19HSX02	Problem Solving and Programming Skills Lab / Communicative English Lab	4/ 10,12	-	-	3	1.5
6	19BEX04 19BEX05	Engineering Drawing / Engineering Workshop	1,5,10/ 1,9,10	-	-	3	1.5
7	19PYX02 19CYX02	Engineering Physics Lab / Engineering Chemistry Lab	4/ 4	-	-	3	1.5
Total				12	4	9	16.5
Second Semester							
1		Language Elective	10,12	3	1	-	3
2	19MAX02	Engineering Mathematics II	1,12	3	1	-	3
3	19PYX01 19CYX01	Engineering Physics / Engineering Chemistry	1,12/ 1,12	3	1	-	3
4	19BEX01 19BEX02	Basics of Engineering / Problem Solving and Programming Skills	1,12/ 1,12	3	1	-	3
5	19BEX03 19HSX02	Problem Solving and Programming Skills Lab / Communicative English Lab	4/ 10,12	-	-	3	1.5
6	19BEX04 19BEX05	Engineering Drawing / Engineering Workshop	1,5,10/ 1,9,10	-	-	3	1.5
7	19PYX02 19CYX02	Engineering Physics Lab / Engineering Chemistry Lab	4/ 4	-	-	3	1.5
Total				12	4	9	16.5
Third Semester							
1	19IT306	Object Oriented Programming through Java	1,2,3,4,5	3	-	2	4
2	19ME301	Computer Aided Machine Drawing	1,5,10,PSO ₁	3	-	2	4
3	19ME302	Engineering Mechanics	1,2,3	3	1	-	3
4	19ME303	Fluid Mechanics and Hydraulic Machines	1,2,3,PSO ₁	3	1	-	3
5	19ME304	Material Science	1,2,3	3	1	-	3
6	19ME305	Thermodynamics	1,2,3,PSO ₁	3	1	-	3
7	19ME306	Fluid Mechanics and Hydraulic Machines Lab	1,2,10	-	-	3	1.5
8	19ME307	Materials and Processing Lab	1,2,3,10,12	-	-	3	1.5
9	19BEA01	Environmental Studies	1,6,7,12	-	-	-	-
10	19ME408	Employability Skills I	1,2,5,8,10,12	1	1	1	-
11	19HSX11	CC & EC Activities I	6,7,9,10	-	-	1	-
Total				19	5	12	23
Fourth Semester							
1	19MA302	Engineering Mathematics-III	1,4,5	3	-	2	4
2	19ME401	Applied Thermodynamics	1,2,3,7,PSO ₂	3	1	-	3
3	19ME402	Theory of Machines	1,2,3, PSO ₁	3	1	-	3
4	19ME403	Manufacturing Technology	1,2,3,4	3	1	-	3
5	19ME404	Mechanics of Solids	1,2,3, PSO ₁	3	1	-	3
6	19ME405	Thermal Engineering Lab	1,2,3,10,12,PSO ₂	-	-	3	1.5
7	19ME406	Mechanics of Solids Lab	1,2,3,10	-	-	3	1.5
8	19ME407	Comprehensive Quiz I (Sem. 3 & 4)		-	-	-	2
9	19ME408	Employability Skills I	1,2,5,8,10,12	1	1	1	3
10	19HSX11	CC & EC Activities I	6,7,9,10	-	-	1	1
Total				16	5	10	25

Fifth Semester							
1	19ME501	Computer Aided Design and Manufacturing	1,2,5,9,10,PSO ₁	3	-	2	4
2	19ME502	Design of Machine Members I	1,2,3, PSO ₁	3	1	-	3
3	19ME503	Metal Cutting and Machine Tools	1,4,10,PSO ₁ , PSO ₂	3	1	-	3
4	19ME504	Mechanical Measurements and Metrology	1,2,3,4,10	3	-	2	4
5		Elective I (Professional Elective)		3	1	-	3
6		Elective II (Open Elective I)		3	1	-	3
7	19ME507	Metal Cutting and Machine Tools Lab	1,2,3,10, PSO ₂	-	-	3	1.5
8	19ME508	Term Paper	1,4,10,12	-	-	3	1.5
9	19ME609	Employability Skills II	1,2,5,8,10,12	1	1	1	-
10	19HSX12	CC & EC Activities II	6,7,9,10	-	-	1	-
11	19SIX01	Summer Internship #I	1,2,8,10,12	-	-	-	1.5
Total				19	5	12	24.5
Sixth Semester							
1	19ME601	Design of Machine Members II	1,2,3, PSO ₁	3	1	-	3
2	19ME602	Steam and Gas Turbines	1,2,3,6,7,PSO ₂	3	1	-	3
3	19ME603	Heat Transfer	1,2,3,7, PSO ₁ , PSO ₂	3	1	-	3
4		Elective III (Professional Elective)		3/4	-/1	2/-	4
5		Elective IV (Open Elective II)		3	1	-	3
6	19ME606	Heat Transfer Lab	1,2,3,4,7,10	-	-	3	1.5
7	19ME607	Mini Project	All POs	-	-	3	1.5
8	19ME608	Comprehensive Quiz II (Sem. 5 & 6)		-	-	-	2
9	19ME609	Employability Skills II	1,2,5,8,10,12	1	1	1	3
10	19HSX12	CC & EC Activities II	6,7,9,10	-	-	1	1
11		Audit Course		-	-	-	-
Total				16/17	5/6	10/8	25
Seventh Semester							
1	19ME701	Project Work	All POs	-	-	16	8
2		Elective V (Professional Elective)		3	1	-	3
3		Elective VI (Professional Elective)		3	1	-	3
4		Elective VII (Open Elective III)		3	1	-	3
5	19SIX02	Summer Internship #II	1,2,5,6,10,12	-	-	-	1.5
Total				9	3	16	18.5
Eighth Semester							
1	19ME801	Full Semester Internship (FSI)	1,2,5,8,9,10, PSO ₁ ,PSO ₂	-	-	-	9
2		Elective VIII (Professional Elective)		-	-	-	3
3		Elective IX (Open Elective IV)		-	-	-	3
Total				-	-	-	15
Total Credits				104	32	76	164

List of Electives

Language Electives							
No.	Course Code	Course	POs	Contact Hours			
				L	T	P	C
1	19HSX03	Advanced Communicative English	10,12	3	1	-	3
2	19HSX04	Communicative German		3	1	-	3
3	19HSX05	Communicative French		3	1	-	3
4	19HSX06	Communicative Japanese		3	1	-	3
5	19HSX07	Communicative Spanish		3	1	-	3
6	19HSX08	Communicative Korean		3	1	-	3
7	19HSX09	Communicative Hindi		3	1	-	3
Elective I : Career Path I, II, III and Other Core Electives							
1	19MEC11	Automotive Informatics(Automotive Electronics Career Path)	1,5,6	3	1	-	3
2	19MEC21	Fundamentals of Digital Manufacturing Science(Digital Manufacturing Career Path)	1,5,PSO ₂	3	1	-	3
3	19MEC31	Data Analytics & Operations Management(Smart Management Analytics Career Path)	1,2,11	3	1	-	3
4	19ME004	Alternate Fuels and Emission Control in Automotives	1,6,7	3	1	-	3
5	19ME005	Industrial Robotics and Applications	1,2,3, PSO ₁	3	1	-	3
6	19ME006	Nontraditional Machining and Forming Processes	1,2,PSO ₂	3	1	-	3
7		MOOCs		-	-	-	3
Elective II: Open Elective I							
1	19CE001	Disaster Management	2,7	3	1	-	3
2	19EE001	Electrical Installation, Safety and Auditing	2,3,6,8	3	1	-	3
3	19ME001	Fundamentals of Optimization Techniques	1,2	3	1	-	3
4	19EC001	Sensors for Engineering Applications	1	3	1	-	3
5	19CS001	Fundamentals of Artificial Intelligence	1,2,3	3	1	-	3
6	19CH001	Energy Conversion and Storage Devices	1,3,6,7	3	1	-	3
7	19IT001	Fundamentals of Multimedia	1,5,7	3	1	-	3
8	19BS001	Nano Materials and Technology	1,12	3	1	-	3
Elective III : Career Path I, II, III and Other Core Electives							
1	19MEC12	Sensors & Actuators for Automotive Electronics(Automotive Electronics Career Path)	1,4,10,PSO ₂	3	-	2	4
2	19MEC22	Artificial Intelligence & Robotics(Digital Manufacturing Career Path)	2,5,12	3	-	2	4
3	19MEC32	Smart Supply Chain Analytics(Smart Management Analytics Career Path)	1,2,3,5	3	-	2	4
4	19ME007	Design for Manufacturing	1,2,7,12,PSO ₂	4	1	-	4
5	19ME008	Mechatronics	1,2,3,4,9,PSO ₁	4	1	-	4
6	19ME009	Operations Research	1,2,3,5	4	1	-	4
7		MOOCs		-	-	-	3
Elective IV : Open Elective II							
1	19CE002	Air Pollution and Environmental Impact Assessment	6,7,12	3	1	-	3
2	19EE002	Renewable Energy sources	2,7	3	1	-	3
3	19ME002	Principles of Entrepreneurship	1,11	3	1	-	3
4	19EC002	Electronics for Agriculture	1,2	3	1	-	3
5	19CS002	Fundamentals of Machine Learning	2,3	3	1	-	3
6	19CH002	Industrial Safety and Hazard Management	1,2,3,6,8	3	1	-	3
7	19IT002	Fundamentals of Cloud Computing	1,7	3	1	-	3
8	19BS002	Advanced Numerical Techniques	1,2	3	1	-	3
9	19BS003	Functional Materials and Applications	1,7	3	1	-	3
Elective V : Career Path I, II, III and Other Core Electives							
1	19MEC13	Automotive Instrumentation and Diagnostics (Automotive Electronics Career Path)	2,5,6,7,8,12	3	1	-	3
2	19MEC23	3D Printing (Digital Manufacturing Career Path)	1,3,PSO ₁	3	1	-	3
3	19MEC33	Quality Assurance & Reliability Engineering for Sustainability (Smart Management Analytics Career Path)	1,3,5	3	1	-	3

4	19ME010	Automobile Engineering	1,6,7	3	1	-	3
5	19ME011	Computational Fluid Dynamics	1,2,3,4,5	3	1	-	3
6	19ME012	Additive Manufacturing	1,2,3,PSO ₂	3	1	-	3
7		MOOCs		-	-	-	3
Elective VI							
1	19ME013	Refrigeration and Air Conditioning	1, PSO ₂	3	1	-	3
2	19ME014	Industrial IOT for Manufacturing	1,2,PSO ₁ ,PSO ₂	3	1	-	3
3	19ME015	Quality Engineering	1,10,11,12	3	1	-	3
4		MOOCs		-	-	-	3
Elective VII: Open Elective III							
1	19CE003	Solid Waste Management	3,7,12	3	1	-	3
2	19EE003	Fundamentals of Electrical Vehicle Technology	2,3,12	3	1	-	3
3	19ME003	Industrial Engineering and Management	1,11	3	1	-	3
4	19EC003	Interfacing & Programming with Arduino	1,2	3	1	-	3
5	19CS003	Data Science for Engineering Applications	2,3,4	3	1	-	3
6	19CH003	Industrial Ecology for Sustainable Development	2,6,7	3	1	-	3
7	19IT003	Fundamentals of Mobile Computing	1,7	3	1	-	3
8	19BS004	Advanced Materials of Renewable Energy	1,7	3	1	-	3
9	19BS005	Applied Linear Algebra for Engineers	1,12	3	1	-	3
Elective VIII							
1	19ME016	Power Plant Engineering	1,2,3,6,7	-	-	-	3
2	19ME017	Finite Element Methods	1,2,3, PSO ₁	-	-	-	3
3	19ME018	Industrial Tribology	1,2,3,12	-	-	-	3
4		MOOCs		-	-	-	3
Elective IX: Open Elective IV							
1	19CE019	Green Buildings	1,7,12	-	-	-	3
2	19EE017	Sustainable Energy	1,2,12	-	-	-	3
3	19ME019	Total Quality Management	1,11	-	-	-	3
4	19EC011	Communication Technologies	1,2	-	-	-	3
5	19CS020	Applications of Artificial Intelligence	2,3,6,7	-	-	-	3
6	19CH016	Green Technologies	1,6,7	-	-	-	3
7	19IT015	Human Computer Interaction	1,7	-	-	-	3
8	19BS006	Handling of Industrial Waste and Waste water	1,7	-	-	-	3
Audit Course							
1	19AT001	Communication Etiquette in Workplaces					
2	19AT002	Contemporary India: Economy, Policy and Society					
3	19AT003	Design The Thinking					
4	19AT004	Ethics and Integrity					
5	19AT005	Indian Heritage and Culture					
6	19AT006	Human Values and Professional Ethics					
7	19AT007	Intellectual Property Rights and Patents					
8	19AT008	Introduction to Journalism					
9	19AT009	Mass Media Communication					
10	19AT010	Science, Technology and Development					
11	19AT011	Social Responsibility					
12	19AT012	The Art of Photography and Film Making					
13	19AT013	Gender Equality for Sustainability					
14	19AT014	Women in Leadership					
15	19AT015	Introduction to Research Methodology					
16	19AT016	Climate Change and Circular Economy					

B.Tech. (Honors)							
Domain I-Automobile Technology and Systems							
1	19MEH11	Alternative Energy Sources for Automobiles	1,7	4	-	-	4
2	19MEH12	Automobile body and Chassis Systems	1,6,7	4	-	-	4
3	19MEH13	Automotive Transmission Systems	1,2,3	4	-	-	4
4	19MEH14	Vehicle Aero Dynamics	1,3,7	4	-	-	4
Domain II- Application of Vibro-dynamics and lubrication in Modern Engineering							
1	19MEH21	Dynamics of Systems	1,2	4	-	-	4
2	19MEH22	Mechanical Vibrations	1,2,PSO ₁	4	-	-	4
3	19MEH23	Modern Concepts of Engineering Design	1,2,4,5,PSO ₁	4	-	-	4
4	19MEH24	Theory of Lubrication	1,2	4	-	-	4
Domain III-Manufacturing Automation and Inspection							
1	19MEH31	Welding Technology	1,5,PSO ₁	4	-	-	4
2	19MEH32	Precision Engineering	1,2,8	4	-	-	4
3	19MEH33	Automation in Manufacturing	1,2,PSO ₂	4	-	-	4
4	19MEH34	Non-Destructive Testing Methods	1,PSO ₂	4	-	-	4
Domain IV-Production & Operations Strategy							
1	19MEH41	Maintenance Engineering	1,5,12	4	-	-	4
2	19MEH42	Production Operations and Management	1,5,11	4	-	-	4
3	19MEH43	Advanced Assessment systems of Industrial Processes	1,2,3,4,11	4	-	-	4
4	19MEH44	Enterprise Resource Planning	1,6,9,11	4	-	-	4
B.Tech. (Minors)							
Energy Science & Technology							
1	19CHM11	Foundation of Energy Science and Technology	1,2,3,5,7,12	4	-	-	4
2	19CHM12	Energy Generation from Waste	1,2,3,4,5	4	-	-	4
3	19CHM13	Energy Storage Systems	1,2,3,6,7	4	-	-	4
4	19CHM14	Hydrogen Energy and Fuel Cells	1,2,3,7	4	-	-	4
Nano Science & Technology							
1	19CHM21	Introduction and Characterization of Nano Materials	1,2,3,7	4	-	-	4
2	19CHM22	Carbon NanoStructures and Applications	1,3,4,5	4	-	-	4
3	19CHM23	Energy, Environment & Biomedical Nanotechnology	1,2,3,7	4	-	-	4
4	19CHM24	Industrial Applications of Nano Technology	2,3,5,7	4	-	-	4
Environment Engineering							
1	19CEM11	Watershed Engineering	6,7	4	-	-	4
2	19CEM12	Industrial Pollution Control and Engineering	3,6,7,12	4	-	-	4
3	19CEM13	Solid and Hazardous Waste Management	1,3,6,7	4	-	-	4
4	19CEM14	Ecology and Environmental Assessment	1,3,6,7	4	-	-	4
Artificial Intelligence & Machine Learning							
1	19CSM11	Fundamentals of AI & Machine Learning	1,12	4	-	-	4
2	19CSM12	Feature Engineering for Machine Learning	1,2,3	4	-	-	4
3	19CSM13	Exploratory Data Analytics	1,4	4	-	-	4
4	19CSM14	Deep Learning	1,2,4	4	-	-	4
Cyber Security							
1	19CSM21	Fundamentals of Security	1,2	4	-	-	4
2	19CSM22	Management of Information Security	3,6,7	4	-	-	4
3	19CSM23	Cyber Security	1,3,4	4	-	-	4
4	19CSM24	Cloud Security	2,3	4	-	-	4
Data Science & Analytics							
1	19CSM31	Data Cleaning	2,3,4	4	-	-	4
2	19CSM32	Data Engineering	1,2,3,4	4	-	-	4
3	19CSM33	Text Analytics	1,2,4	4	-	-	4
4	19CSM34	Social Network and Semantic Analysis	2,4	4	-	-	4
Computer Systems Programming							
1	19CSM41	Programming Fundamentals	1,2,3	4	-	-	4
2	19CSM41	Data Structures & Algorithms	1,2,3,4	4	-	-	4
3	19CSM41	Fundamentals of Databases	1,4	4	-	-	4
4	19CSM41	Fundamentals of Computer Networks & Operating Systems	1,2,3	4	-	-	4
Digital IC Design							
1	19ECM11	Fundamentals of VLSI Design	1,2,3	4	-	-	4

2	19ECM12	Digital Design using HDL	1,2,3	4	-	-	4
3	19ECM13	FPGA Technology	1,2	4	-	-	4
4	19ECM14	Analog and Mixed Signal Design	1,2	4	-	-	4
Industrial Automation							
1	19ECM21	Microcontrollers and Interfacing	1,2,3	4	-	-	4
2	19ECM22	Sensors and Data Acquisition System	1,2	4	-	-	4
3	19ECM23	Fundamentals of Labview	1,2	4	-	-	4
4	19ECM24	Medical Robotics	1,2,3	4	-	-	4
Communications and Networking							
1	19ECM31	Principles of communications	1,2	4	-	-	4
2	19ECM32	Coding Theory and Practice	1,2	4	-	-	4
3	19ECM33	Ad-hoc and wireless sensor Networks	1,2,3	4	-	-	4
4	19ECM34	Fundamentals of Multimedia Networking	1,2,3	4	-	-	4
Avionics							
1	19ECM41	Principles of Aerodynamics	1,2	4	-	-	4
2	19ECM42	Aircraft Electrical Systems	1,2	4	-	-	4
3	19ECM43	Aircraft Instrument Systems	1,2	4	-	-	4
4	19ECM44	Aircraft Communication and Navigational systems	1,2	4	-	-	4
Geographic Information System							
1	19ECM51	Sensors and Sensing Technology	1,2	4	-	-	4
2	19ECM52	Geographic Information Systems	1,2	4	-	-	4
3	19ECM53	Digital Image Processing	1,2	4	-	-	4
4	19ECM54	Lidar Systems	1,2	4	-	-	4
Electric Vehicles Technology							
1	19EEM11	Introduction to Electric Vehicles Technologies	2,3	4	-	-	4
2	19EEM12	Electrical Drives and Controllers for Electric Vehicles	2,3	4	-	-	4
3	19EEM13	Charging Technology in Electric Vehicles	2,3	4	-	-	4
4	19EEM14	Computer Vision in Electric Vehicles	2,3	4	-	-	4
Smart City Management							
1	19EEM21	Fundamentals of Smart City	2,3	4	-	-	4
2	19EEM22	Smart City Infrastructure	2,3,5,6,7,11	4	-	-	4
3	19EEM23	Computational Methods for Smart City Management	3,5	4	-	-	4
4	19EEM24	Communication Technologies and Mobility for smart city	2,3	4	-	-	4
Industrial Applications and Control							
1	19EEM31	Modelling and Simulations of Industrial Applications	2,3	4	-	-	4
2	19EEM32	Industrial Sensors and Actuators	2,3	4	-	-	4
3	19EEM33	Programmable Logic Controllers	2,3	4	-	-	4
4	19EEM34	Control Design for Industrial Applications	2,3	4	-	-	4
Cloud Application Development							
1	19ITM11	Introduction to Cloud Computing	6,7,12	4	-	-	4
2	19ITM12	Introduction to Web Development with HTML, CSS, JavaScript	1,2,3,9,12	4	-	-	4
3	19ITM13	Developing Cloud Native Applications	5,8,10	4	-	-	4
4	19ITM14	Developing Cloud Apps with Node.js and React	5,8,10	4	-	-	4

Department of Mechanical Engineering

Minimum Credits to be Earned: 160 (for Regular Students)

127 (for Lateral Entry Students)

First Semester							
No.	Course Code	Course	POs	Contact Hours			
				L	T	P	C
1	20HSX01	Communicative English	10,12	3	1	-	3
2	20MAX01	Engineering Mathematics I	1,12	3	1	-	3
3	20PYX01 20CYX01	Engineering Physics / Engineering Chemistry	1,12/ 1,12	3	1	-	3
4	20BEX01 20BEX02	Basics of Engineering / Problem Solving and Programming Skills	1,12/ 1,12	3	1	-	3
5	20BEX03 20HSX02	Problem Solving and Programming Skills Lab / Communicative English Lab	4/ 10,12	-	-	3	1.5
6	20BEX04 20BEX05	Engineering Drawing / Engineering Workshop	1,5,10/ 1,9,10	-	-	3	1.5
7	20PYX02 20CYX02	Engineering Physics Lab / Engineering Chemistry Lab	4/ 4	-	-	3	1.5
Total				12	4	9	16.5
Second Semester							
1		Language Elective	10,12	3	1	-	3
2	20MAX02	Engineering Mathematics II	1,12	3	1	-	3
3	20PYX01 20CYX01	Engineering Physics / Engineering Chemistry	1,12/ 1,12	3	1	-	3
4	20BEX01 20BEX02	Basics of Engineering / Problem Solving and Programming Skills	1,12/ 1,12	3	1	-	3
5	20BEX03 20HSX02	Problem Solving and Programming Skills Lab / Communicative English Lab	4/ 10,12	-	-	3	1.5
6	20BEX04 20BEX05	Engineering Drawing / Engineering Workshop	1,5,10/ 1,9,10	-	-	3	1.5
7	20PYX02 20CYX02	Engineering Physics Lab / Engineering Chemistry Lab	4/ 4	-	-	3	1.5
Total				12	4	9	16.5
Third Semester							
1	20ME301	Manufacturing Technology	1,2,3,4	3	-	2	4
2	20ME302	Computer Aided Machine Drawing	1,5,10,PSO ₁	3	-	2	4
3	20ME303	Engineering Mechanics	1,2,3	3	1	-	3
4	20ME304	Fluid Mechanics and Hydraulic Machines	1,2,3,PSO ₁	3	1	-	3
5	20ME305	Kinematics of Machinery	1,2,3	3	1	-	3
6	20ME306	Thermodynamics	1,2,3,PSO ₁	3	1	-	3
7	20ME307	Fluid Mechanics and Hydraulic Machines Lab	1,2,10	-	-	3	1.5
8	20MA304	Computational Mathematics using Python	1,4,10	-	-	3	1.5
9	20BEA01	Environmental Studies	1,6,7,12	-	-	-	-
10	20ESX01	Employability Skills I	1,2,5,8,10,12	1	1	1	-
11	20HSX11	CC & EC Activities I	6,7,9,10	-	-	1	-
Total				19	5	12	23
Fourth Semester							
1	20IT306	Object Oriented Programming through Java	1,2,3,4,5	3	-	2	4
2	20ME401	Applied Thermodynamics	1,2,3,7,PSO ₂	3	1	-	3
3	20ME402	Dynamics of Machinery	1,2,3	3	1	-	3
4	20ME403	Metal Cutting and Machine Tools	1,2,3	3	1	-	3
5	20ME404	Mechanics of Solids	1,2,3,10	3	1	-	3
6	20ME405	Thermal Engineering Lab	1,2,3,10,12,PSO ₂	-	-	3	1.5
7	20ME406	Mechanics of Solids Lab	1,2,3,10	-	-	3	1.5
8	20ESX01	Employability Skills I	1,2,5,8,10,12	1	1	1	3
9	20HSX11	CC & EC Activities I	6,7,9,10	-	-	1	1
Total				16	5	10	23

Fifth Semester							
1	20ME501	Computer Aided Design and Manufacturing	1,2,5,9,10,PSO ₁	3	-	2	4
2	20ME502	Design of Machine Members I	1,2,3,PSO ₁	3	1	-	3
3	20ME503	Steam and Gas Turbines	1,2,3,6,7,PSO ₂	3	1	-	3
4	20ME504	Mechanical Measurements and Metrology	1,2,3,4,10	3	-	2	4
5		Elective I (Professional Elective)		3	1	-	3
6		Elective II (Open Elective I)		3	1	-	3
7	20ME507	Metal Cutting and Machine Tools Lab	1,2,3,4,PSO ₁ ,PSO ₂	-	-	3	1.5
8	20TPX01	Term Paper	1,4,10,12	-	-	3	1.5
9	20ESX02	Employability Skills II	1,2,5,8,10,12	1	1	1	-
10	20HSX12	CC & EC Activities II	6,7,9,10	-	-	1	-
11	20SIX01	Summer Internship #I	1,2,8,10,12	-	-	-	1.5
Total				19	5	12	24.5
Sixth Semester							
1	20ME601	Design of Machine Members II	1,2,3,PSO ₁	3	1	-	3
2	20ME602	Finite Element Methods	1,2,3,PSO ₁	3	1	-	3
3	20ME603	Heat Transfer	1,2,3,7,PSO ₁ , PSO ₂	3	1	-	3
4		Elective III (Professional Elective)		3	-	2	4
5		Elective IV (Open Elective II)		3	1	-	3
6	20ME606	Heat Transfer Lab	1,2,3,4,7,10	-	-	3	1.5
7	20MPX01	Mini Project	All POs	-	-	3	1.5
8	20ESX02	Employability Skills II	1,2,5,8,10,12	1	1	1	3
9	20HSX12	CC & EC Activities II	6,7,9,10	-	-	1	1
10		Audit Course		-	-	-	-
Total				16	5	10	23
Seventh Semester							
1	20PWX01	Project Work	All POs	-	-	16	8
2		Elective V (Professional Elective)		3	1	-	3
3		Elective VI (Professional Elective)		3	1	-	3
4		Elective VII (Open Elective III)		3	1	-	3
5	20SIX02	Summer Internship #II	1,2,5,6,10,12	-	-	-	1.5
Total				9	3	16	18.5
Eighth Semester							
1	20FIX01	Full Semester Internship (FSI)	1,2,5,8,9,10, PSO ₁ ,PSO ₂	-	-	-	9
2		Elective VIII (Professional Elective)		-	-	-	3
3		Elective IX (Open Elective IV)		-	-	-	3
Total				-	-	-	15
Total Credits				103	31	78	160

List of Electives

Language Electives							
No.	Course Code	Course	POs	Contact Hours			
				L	T	P	C
1	20HSX03	Advanced Communicative English	10,12	3	1	-	3
2	20HSX04	Communicative German		3	1	-	3
3	20HSX05	Communicative French		3	1	-	3
4	20HSX06	Communicative Japanese		3	1	-	3
5	20HSX07	Communicative Spanish		3	1	-	3
6	20HSX08	Communicative Korean		3	1	-	3
7	20HSX09	Communicative Hindi		3	1	-	3
Elective I : Career Path I, II, III and Other Core Electives							
1	20MEC11	Automotive Informatics(Automotive Electronics Career Path)	1,5,6	3	1	-	3
2	20MEC21	Fundamentals of Digital Manufacturing Science(Digital Manufacturing Career Path)	1,5,PSO ₂	3	1	-	3
3	20MEC31	Data Analytics & Operations Management(Smart Management Analytics Career Path)	1,2,11	3	1	-	3
4	20ME004	Alternate Fuels and Emission Control in Automotives	1,6,7	3	1	-	3
5	20ME005	Industrial Robotics and Applications	1,2,3, PSO ₁	3	1	-	3
6	20ME006	Nontraditional Machining and Forming Processes	1,2,PSO ₂	3	1	-	3
7		MOOCs		-	-	-	3
Elective II: Open Elective I							
1	20CE001	Disaster Management	2,7	3	1	-	3
2	20EE001	Electrical Installation, Safety and Auditing	2,3,6,8	3	1	-	3
3	20ME001	Fundamentals of Optimization Techniques	1,2	3	1	-	3
4	20EC001	Sensors for Engineering Applications	1	3	1	-	3
5	20CS001	Fundamentals of Artificial Intelligence	1,2,3	3	1	-	3
6	20CH001	Energy Conversion and Storage Devices	1,3,6,7	3	1	-	3
7	20IT001	Fundamentals of Multimedia	1,5,7	3	1	-	3
8	20BS001	Nano Materials and Technology	1,12	3	1	-	3
Elective III : Career Path I, II, III and Other Core Electives							
1	20MEC12	Sensors & Actuators for Automotive Electronics(Automotive Electronics Career Path)	1,4,10,PSO ₂	3	-	2	4
2	20MEC22	Artificial Intelligence & Robotics(Digital Manufacturing Career Path)	2,5,12	3	-	2	4
3	20MEC32	Smart Supply Chain Analytics(Smart Management Analytics Career Path)	1,2,3,5	3	-	2	4
4	20ME007	Additive Manufacturing	1,2,3,PSO ₂	3	-	2	4
5	20ME008	Mechatronics	1,2,3,4,9,PSO ₁	3	-	2	4
6	20ME009	Computational Fluid Dynamics	1,2,3,4,5	3	-	2	4
Elective IV : Open Elective II							
1	20CE002	Air Pollution and Environmental Impact Assessment	6,7,12	3	1	-	3
2	20EE002	Renewable Energy sources	2,7	3	1	-	3
3	20ME002	Principles of Entrepreneurship	1,11	3	1	-	3
4	20EC002	Electronics for Agriculture	1,2	3	1	-	3
5	20CS002	Fundamentals of Machine Learning	2,3	3	1	-	3
6	20CH002	Industrial Safety and Hazard Management	1,2,3,6,8	3	1	-	3
7	20IT002	Fundamentals of Cloud Computing	1,7	3	1	-	3
8	20BS002	Advanced Numerical Techniques	1,2	3	1	-	3
9	20BS003	Functional Materials and Applications	1,7	3	1	-	3
Elective V : Career Path I, II, III and Other Core Electives							
1	20MEC13	Automotive Instrumentation and Diagnostics (Automotive Electronics Career Path)	1,2,5	3	1	-	3
2	20MEC23	3D Printing (Digital Manufacturing Career Path)	1,5,PSO ₂	3	1	-	3
3	20MEC33	Quality Assurance & Reliability Engineering for Sustainability (Smart Management Analytics Career Path)	1,3,5	3	1	-	3
4	20ME010	Automobile Engineering	1,6,7	3	1	-	3
5	20ME011	Design for Manufacturing	1,2,7,12,PSO ₂	3	1	-	3

6	20ME012	Operations Research	1,2,3,5	3	1	-	3
7		MOOCs		-	-	-	3
Elective VI							
1	20ME013	Refrigeration and Air Conditioning	1,2,3,7	3	1	-	3
2	20ME014	Industrial IOT for Manufacturing	1,2, PSO ₁ , PSO ₂	3	1	-	3
3	20ME015	Quality Engineering	1,5,10,11,12	3	1	-	3
4		MOOCs		-	-	-	3
Elective VII: Open Elective III							
1	20CE003	Solid Waste Management	3,7,12	3	1	-	3
2	20EE003	Fundamentals of Electrical Vehicle Technology	2,3,12	3	1	-	3
3	20ME003	Industrial Engineering and Management	1,11	3	1	-	3
4	20EC003	Interfacing & Programming with Arduino	1,2	3	1	-	3
5	20CS003	Data Science for Engineering Applications	2,3,4	3	1	-	3
6	20CH003	Industrial Ecology for Sustainability Development	2,6,7	3	1	-	3
7	20IT003	Fundamentals of Mobile Computing	1,7	3	1	-	3
8	20BS004	Advanced Materials of Renewable Energy	1,7	3	1	-	3
9	20BS005	Applied Linear Algebra for Engineers	1,12	3	1	-	3
Elective VIII							
1	20ME016	Power Plant Engineering	1,2,3,6,7	-	-	-	3
2	20ME017	Supply Chain Management	1,2,5,10,11,12	-	-	-	3
3	20ME018	Industrial Tribology	1,2,3,12	-	-	-	3
4		MOOCs		-	-	-	3
Elective IX: Open Elective IV							
1	20CE019	Green Buildings	1,7,12	-	-	-	3
2	20EE017	Sustainable Energy	1,2,12	-	-	-	3
3	20ME019	Total Quality Management	1,11	-	-	-	3
4	20EC011	Communication Technologies	1,2	-	-	-	3
5	20CS020	Applications of Artificial Intelligence	2,3,6,7	-	-	-	3
6	20CH016	Green Technologies	1,6,7	-	-	-	3
7	20IT015	Human Computer Interaction	1,7	-	-	-	3
8	20BS006	Handling of Industrial Waste and Waste water	1,7	-	-	-	3
Audit Course							
1	20AT001	Communication Etiquette in Workplaces					
2	20AT002	Contemporary India: Economy, Policy and Society					
3	20AT003	Design The Thinking					
4	20AT004	Ethics and Integrity					
5	20AT005	Indian Heritage and Culture					
6	20AT006	Human Values and Professional Ethics					
7	20AT007	Intellectual Property Rights and Patents					
8	20AT008	Introduction to Journalism					
9	20AT009	Mass Media Communication					
10	20AT010	Science, Technology and Development					
11	20AT011	Social Responsibility					
12	20AT012	The Art of Photography and Film Making					
13	20AT013	Gender Equality for Sustainability					
14	20AT014	Women in Leadership					
15	20AT015	Introduction to Research Methodology					
16	20AT016	Climate Change and Circular Economy					

B.Tech. (Honors)							
Domain I-Automobile Technology and Systems							
1	20MEH11	Alternative Energy Sources for Automobiles	1,7	4	-	-	4
2	20MEH12	Automobile body and Chassis Systems	1,6,7	4	-	-	4
3	20MEH13	Automotive Transmission Systems	1,2,3	4	-	-	4
4	20MEH14	Vehicle Aero Dynamics	1,3,7	4	-	-	4
Domain II- Application of Vibro-dynamics and lubrication in Modern Engineering							
1	20MEH21	Dynamics of Systems	1,2	4	-	-	4
2	20MEH22	Mechanical Vibrations	1,2,PSO ₁	4	-	-	4
3	20MEH23	Modern Concepts of Engineering Design	1,2,4,5,PSO ₁	4	-	-	4
4	20MEH24	Theory of Lubrication	1,2	4	-	-	4
Domain III-Manufacturing Automation and Inspection							
1	20MEH31	Welding Technology	1,5,PSO ₁	4	-	-	4
2	20MEH32	Precision Engineering	1,2,8	4	-	-	4
3	20MEH33	Automation in Manufacturing	1,2,PSO ₂	4	-	-	4
4	20MEH34	Non-Destructive Testing Methods	1,PSO ₂	4	-	-	4
Domain IV-Production & Operations Strategy							
1	20MEH41	Maintenance Engineering	1,5,12	4	-	-	4
2	20MEH42	Production Operations and Management	1,5,11	4	-	-	4
3	20MEH43	Advanced Assessment systems of Industrial Processes	1,2,3,4,11	4	-	-	4
4	20MEH44	Enterprise Resource Planning	1,6,9,11	4	-	-	4

B.Tech. (Minors)							
Energy Science & Technology							
1	20CHM11	Foundation of Energy Science and Technology	1,2,3,5,7,12	4	-	-	4
2	20CHM12	Energy Generation from Waste	1,2,3,4,5	4	-	-	4
3	20CHM13	Energy Storage Systems	1,2,3,6,7	4	-	-	4
4	20CHM14	Hydrogen Energy and Fuel Cells	1,2,3,7	4	-	-	4
Nano Science & Technology							
1	20CHM21	Introduction and Characterization of Nano Materials	1,2,3,7	4	-	-	4
2	20CHM22	Carbon NanoStructures and Applications	1,3,4,5	4	-	-	4
3	20CHM23	Energy, Environment & Biomedical Nanotechnology	1,2,3,7	4	-	-	4
4	20CHM24	Industrial Applications of Nano Technology	2,3,5,7	4	-	-	4
Environment Engineering							
1	20CEM11	Watershed Engineering	6,7	4	-	-	4
2	20CEM12	Industrial Pollution Control and Engineering	3,6,7,12	4	-	-	4
3	20CEM13	Solid and Hazardous Waste Management	1,3,6,7	4	-	-	4
4	20CEM14	Ecology and Environmental Assessment	1,3,6,7	4	-	-	4
Artificial Intelligence & Machine Learning							
1	20CSM11	Fundamentals of AI & Machine Learning	1,12	4	-	-	4
2	20CSM12	Feature Engineering for Machine Learning	1,2,3	4	-	-	4
3	20CSM13	Exploratory Data Analytics	1,4	4	-	-	4
4	20CSM14	Deep Learning	1,2,4	4	-	-	4
Cyber Security							
1	20CSM21	Fundamentals of Security	1,2	4	-	-	4
2	20CSM22	Management of Information Security	3,6,7	4	-	-	4
3	20CSM23	Cyber Security	1,3,4	4	-	-	4
4	20CSM24	Cloud Security	2,3	4	-	-	4
Data Science & Analytics							
1	20CSM31	Data Cleaning	2,3,4	4	-	-	4
2	20CSM32	Data Engineering	1,2,3,4	4	-	-	4
3	20CSM33	Text Analytics	1,2,4	4	-	-	4
4	20CSM34	Social Network and Semantic Analysis	2,4	4	-	-	4
Computer Systems Programming							
1	20CSM41	Programming Fundamentals	1,2,3	4	-	-	4
2	20CSM41	Data Structures & Algorithms	1,2,3,4	4	-	-	4
3	20CSM41	Fundamentals of Databases	1,4	4	-	-	4
4	20CSM41	Fundamentals of Computer Networks & Operating Systems	1,2,3	4	-	-	4

Digital IC Design							
1	20ECM11	Fundamentals of VLSI Design	1,2,3	4	-	-	4
2	20ECM12	Digital Design using HDL	1,2,3	4	-	-	4
3	20ECM13	FPGA Technology	1,2	4	-	-	4
4	20ECM14	Analog and Mixed Signal Design	1,2	4	-	-	4
Industrial Automation							
1	20ECM21	Microcontrollers and Interfacing	1,2,3	4	-	-	4
2	20ECM22	Sensors and Data Acquisition System	1,2	4	-	-	4
3	20ECM23	Fundamentals of Labview	1,2	4	-	-	4
4	20ECM24	Medical Robotics	1,2,3	4	-	-	4
Communications and Networking							
1	20ECM31	Principles of communications	1,2	4	-	-	4
2	20ECM32	Coding Theory and Practice	1,2	4	-	-	4
3	20ECM33	Ad-hoc and wireless sensor Networks	1,2,3	4	-	-	4
4	20ECM34	Fundamentals of Multimedia Networking	1,2,3	4	-	-	4
Avionics							
1	20ECM41	Principles of Aerodynamics	1,2	4	-	-	4
2	20ECM42	Aircraft Electrical Systems	1,2	4	-	-	4
3	20ECM43	Aircraft Instrument Systems	1,2	4	-	-	4
4	20ECM44	Aircraft Communication and Navigational systems	1,2	4	-	-	4
Geographic Information System							
1	20ECM51	Sensors and Sensing Technology	1,2	4	-	-	4
2	20ECM52	Geographic Information Systems	1,2	4	-	-	4
3	20ECM53	Digital Image Processing	1,2	4	-	-	4
4	20ECM54	Lidar Systems	1,2	4	-	-	4
Electric Vehicles Technology							
1	20EEM11	Introduction to Electric Vehicles Technologies	2,3	4	-	-	4
2	20EEM12	Electrical Drives and Controllers for Electric Vehicles	2,3	4	-	-	4
3	20EEM13	Charging Technology in Electric Vehicles	2,3	4	-	-	4
4	20EEM14	Computer Vision in Electric Vehicles	2,3	4	-	-	4
Smart City Management							
1	20EEM21	Fundamentals of Smart City	2,3	4	-	-	4
2	20EEM22	Smart City Infrastructure	2,3,5,6,7,11	4	-	-	4
3	20EEM23	Computational Methods for Smart City Management	3,5	4	-	-	4
4	20EEM24	Communication Technologies and Mobility for smart city	2,3	4	-	-	4
Industrial Applications and Control							
1	20EEM31	Modelling and Simulations of Industrial Applications	2,3	4	-	-	4
2	20EEM32	Industrial Sensors and Actuators	2,3	4	-	-	4
3	20EEM33	Programmable Logic Controllers	2,3	4	-	-	4
4	20EEM34	Control Design for Industrial Applications	2,3	4	-	-	4
Cloud Application Development							
1	20ITM11	Introduction to Cloud Computing	6,7,12	4	-	-	4
2	20ITM12	Introduction to Web Development with HTML, CSS, JavaScript	1,2,3,9,12	4	-	-	4
3	20ITM13	Developing Cloud Native Applications	5,8,10	4	-	-	4
4	20ITM14	Developing Cloud Apps with Node.js and React	5,8,10	4	-	-	4