

ACADEMIC CURRICULA
UNDERGRADUATE/ INTEGRATED
POST GRADUATE DEGREE
PROGRAMMES

(With exit option of Diploma)

(Choice Based Flexible Credit System)

Regulations 2021

Volume – 1

(Updated on July 2025)



SRM
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University u/s 3 of UGC Act, 1956)

Kattankulathur, Chengalpattu District 603203,

Tamil Nadu, India

39. B.Tech. in Mechanical Engineering

39. (a) Mission of the Department

Mission Stmt – 1	<i>To impart quality education to produce eminent mechanical engineers</i>
Mission Stmt – 2	<i>To establish Centers of Research Excellence to inculcate research acumen to faculty and students on the emerging thrust areas of mechanical engineering.</i>
Mission Stmt – 3	<i>To inculcate progressive education and intricate facts through cognitive training programs to the faculty and students using state-of-art facilities.</i>

39. (b) Program Educational Objectives (PEO)

PEO – 1	<i>Practice mechanical engineering in different disciplines towards system design, realization, and manufacturing</i>
PEO – 2	<i>Enhance professional practice to meet the global standards with ethical and social responsibility</i>
PEO – 3	<i>Provide solutions to industrial, social, and environmental issues with appropriate techniques and tools</i>
PEO – 4	<i>Progress in multi-disciplinary skills and transcend in leadership qualities</i>

39. (c) Mission of the Department to Program Educational Objectives (PEO) Mapping

	Mission Stmt. - 1	Mission Stmt. - 2	Mission Stmt. - 3
PEO - 1	3	3	3
PEO - 2	2	2	3
PEO - 3	3	3	3
PEO - 4	2	3	3

3 – High Correlation, 2 – Medium Correlation, 1 – Low Correlation

39. (d) Mapping Program Educational Objectives (PEO) to Program Outcomes (PO)

	Program Outcomes (PO)												Program Specific Outcomes (PSO)		
	1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2	PSO-3
	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning			
PEO - 1	3	3	2	3	3	-	-	-	-	-	-	-	3	3	-
PEO - 2	-	-	3	-	-	3	3	3	-	-	-	3	-	-	-
PEO - 3	3	3	3	3	3	3	3	2	-	1	2	3	3	3	-
PEO - 4	-	3	3	2	3	-	-	-	3	3	3	3	3	3	-

3 – High Correlation, 2 – Medium Correlation, 1 – Low Correlation

PSO – Program Specific Outcomes (PSO)

PSO - 1	<i>Apply contemporary technologies for sustainable development in mechanical engineering systems</i>
PSO - 2	<i>Ability to adopt appropriate tools and techniques to solve the problems in various domains of mechanical engineering.</i>

39. (e) Program Structure: B.Tech. in Mechanical Engineering

Humanities & Social Sciences including Management Courses (H)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
21LEH101T	Communicative English	2	1	0	3		
21LEH102T	Chinese	2	1	0	3		
21LEH103T	French						
21LEH104T	German						
21LEH105T	Japanese						
21LEH106T	Korean						
21LEH107T	Spanish						
21LEH108T	Russian						
21GNH101J	Philosophy of Engineering	1	0	2	2		
21PDH209T ¹	Social Engineering	2	0	0	2		
21GNH401TA	Behavioral Psychology	2	1	0	3		
Total Credits 13							

Basic Science Courses (B)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
21MAB101T	Calculus and Linear Algebra	3	1	0	4		
21CYB101J	Chemistry	3	1	2	5		
21BTB103T	Biology	2	0	0	2		
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4		
21PYB101J	Physics: Electromagnetic Theory, Quantum Mechanics, Waves and Optics	3	1	2	5		
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4		
21MAB202T	Numerical Methods	3	1	0	4		
21MAB301T	Probability and Statistics	3	1	0	4		
Total Credits 32							

Engineering Science Courses (S)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
21CSS101J	Programming for Problem Solving	3	0	2	4		
21MES101L ¹	Basic Civil and Mechanical Workshop	0	0	4	2		
21MES102L ¹	Engineering Graphics and Design	0	0	4	2		
21EES101T	Electrical and Electronics Engineering	3	1	0	4		
21MES101T	Engineering Mechanics	3	1	0	4		
21DCS201P ¹	Design Thinking and Methodology	1	2	0	3		
21CSS303T	Data Science	2	0	0	2		
Total Credits 21							

Open Elective Courses (O) (Any 3 Course)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
21MEO101T	Fundamentals of Composite Materials	3	0	0	3		
21MEO102T	Reverse Engineering and 3D Printing	3	0	0	3		
21MEO103T	Fundamentals of Biomechanics	3	0	0	3		
21MEO104T	TQM and Reliability Engineering	3	0	0	3		
21MEO105T	Occupational Safety and Disaster Management	3	0	0	3		
21MEO106T	Introduction to Robotics	3	0	0	3		
21MEO107T	Fundamentals of Nano Engineering	3	0	0	3		
21MEO108T	Computer Numerical Control Programming and Operation	3	0	0	3		
21MEO109T	Resource Management Techniques	3	0	0	3		
21MEO110T	Energy Systems for Sustainable Buildings	3	0	0	3		
21MEO111T	Environmental Pollution and Abatement	3	0	0	3		
21MEO112T	Renewable Energy Sources and Application	3	0	0	3		
21MEO113J	Electronics Thermal Management	2	0	2	3		
21MEO114T	Solar Energy for Societal Applications	3	0	0	3		
21MEO115T	Introduction to Drones	3	0	0	3		
Total Credits 9							

Professional Core Courses (C)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
21MEC201T	Engineering Thermodynamics	3	0	0	3		
21MEC202T ²	Mechanics of Solids	3	1	0	4		
21MEC203T	Engineering Materials and Metallurgy	3	0	0	3		
21MEC204T	Manufacturing Processes and Metrology	3	0	0	3		
21MEC201L ¹	Manufacturing Processes and Metrology Laboratory	0	0	2	1		
21MEC202L ¹	Material Testing Laboratory	0	0	2	1		
21CSC206T	Artificial Intelligence	3	0	0	3		
21MEC205T ²	Fluid Mechanics and Machinery	3	0	0	3		
21MEC206T	Kinematics and Dynamics of Machines	3	0	0	3		
21MEC203L ¹	Machine Dynamics Laboratory	0	0	2	1		
21MEC204L ¹	Fluid Dynamics Laboratory	0	0	2	1		
21MEC205L ¹	Mechanical Modeling and Assembly	0	0	4	2		
21MEC301T	Thermal Systems Engineering	3	1	0	4		
21MEC301P ¹	Design of Mechanical Systems	3	0	0	3		
21MEC302T ²	Sensors and Control Systems	3	0	0	3		
21MEC301L ¹	Thermal Power Systems Laboratory	0	0	2	1		
21MEC302L ¹	Automation and Control Systems Laboratory	0	0	2	1		
21MEC301J	Heat and Mass Transfer	3	0	2	4		
21MEC302J ²	Finite Element Methods	3	0	2	4		
21MEC303T	Industry 4.0	3	0	0	3		
Total Credits 51							

Non Credit Courses (M)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
21PDM101L ¹	Professional Skills and Practices	0	0	2	0		
21PDM102L ¹	General Aptitude	0	0	2			
21PDM201L ¹	Verbal Reasoning	0	0	2			
21PDM202L ¹	Critical and Creative Thinking Skills	0	0	2			
21PDM301L ¹	Analytical and Logical Thinking Skills	0	0	2			
21PDM302L ¹	Employability Skills and Practices	0	0	2			
21CYM101T ¹	Environmental Science	1	0	0		0	
21LEM101T ¹	Constitution of India	1	0	0		0	
21LEM102T ¹	Universal Human Values – Introduction	1	0	0		0	
21LEM201T ¹	Professional Ethics	1	0	0		0	
21LEM202T ¹	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0	3		
21LEM301T ¹	Indian Art Form	1	0	0	0		
21LEM302T ¹	Indian Traditional Knowledge	1	0	0	0		
21GNM101L ¹	Physical and Mental Health using Yoga	0	0	2	0		
21GNM102L ¹	National Service Scheme						
21GNM103L ¹	National Cadet Corps						
21GNM104L ¹	National Sports Organization						
Total Credits 03							

Project Work, Seminar, Internship in Industry / Higher Technical Institutions (P)							
Course Code	Course Title	Hours / Week					
		L	T	P	C		
21GNP301L ¹	Community Connect	0	0	2	1		
21MEP302L ¹	Project	0	0	6	3		
21MEP303T ¹	MOOC	3	0	0			
21MEP401L	Major Project	0	0	30		15	
21MEP402L	Major Project	0	0	20	10		
21MEP403L	Internship#	0	0	10	5		
Total Credits 19							

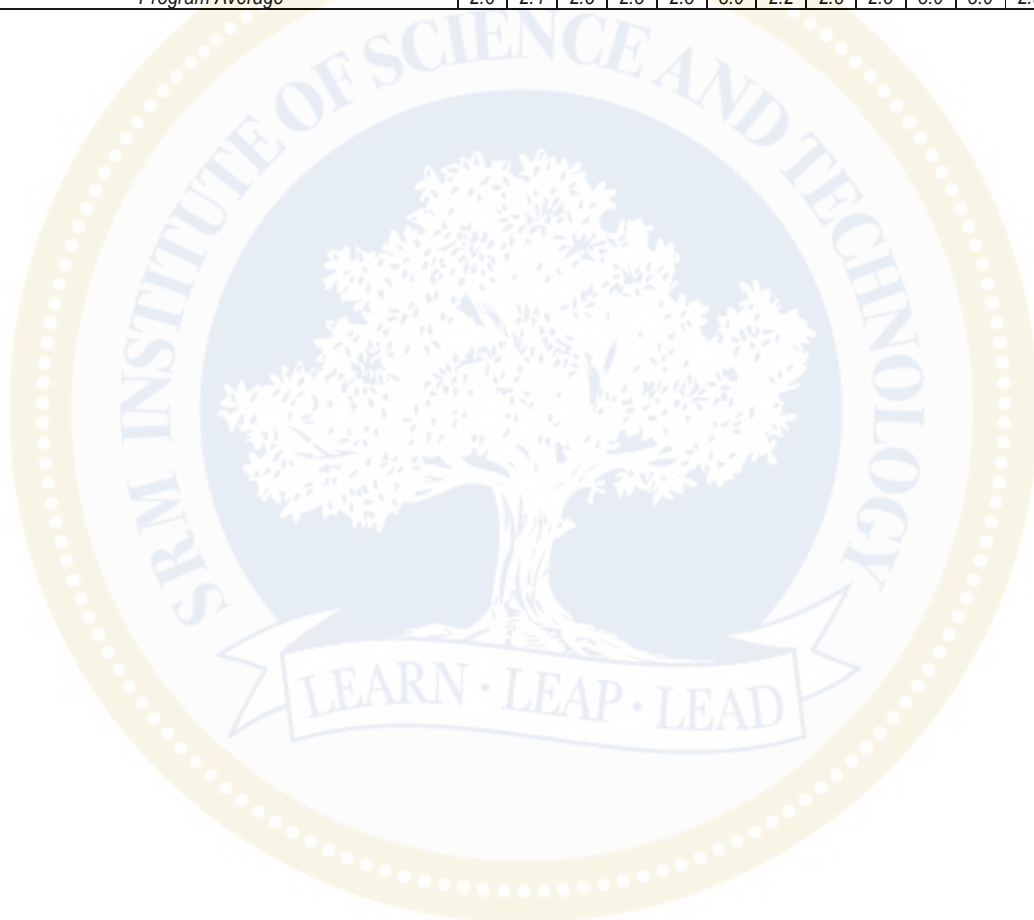
Professional Elective Courses (E) (Any 5 Courses)							Professional Elective Courses (E)						
Course Code	Course Title	Hours / Week			C		Course Code	Course Title	Hours / Week			C	
		L	T	P					L	T	P		
21MEE101T	Computer Aided Design- Computer Aided Manufacturing	3	0	0	3		21MEE213T	Emerging Technologies in Automotive Systems	3	0	0	3	
21MEE102T	Composite Materials and Characterization	3	0	0	3		21MEE214T	Gas Dynamics and Space Propulsion	3	0	0	3	
21MEE103T	Automation in Manufacturing Systems	3	0	0	3		21MEE215T	Computational Fluid Dynamics: Theory with Applications	3	0	0	3	
21MEE104T	Energy Engineering and Management	3	0	0	3		21MEE216T	Modeling and Analysis of Thermal Systems	2	1	0	3	
21MEE105T	Solar Energy Systems	3	0	0	3		21MEE217J	Microelectronics Thermal Management.	2	0	2	3	
21MEE201T	Foundation skills in integrated product development	3	0	0	3		21MEE218T	Aerodynamics of Electric and Sports Vehicles	3	0	0	3	
21MEE202T	Mechanical Vibrations	3	0	0	3		21MEE219T	Green Energy Systems	3	0	0	3	
21MEE203T	Industrial Tribology	3	0	0	3		21MEE301T	Optimization in Engineering Design	3	0	0	3	
21MEE204T	Design for Manufacturing and Assembly	3	0	0	3		21MEE302T	Design of transmission Systems	3	0	0	3	
21MEE205T	Electric Vehicle Technology	3	0	0	3		21MEE303T	Micro and Nano Machining	3	0	0	3	
21MEE206T	Biomechanics	3	0	0	3		21MEE304T	Machine Vision	3	0	0	3	
21MEE207T	Operations Research	3	0	0	3		21MEE305T	Quality Management Systems	3	0	0	3	
21MEE208T	Soft Computing Techniques and Applications in Mechanical Engineering	3	0	0	3		21MEE306T	Energy Conversion Systems	3	0	0	3	
21MEE209T	Process Planning and Cost Estimation	3	0	0	3		21MEE307T	Sustainable and Renewable Energy Systems	3	0	0	3	
21MEE210T	Mechatronics System Design	3	0	0	3		21MEE308T	Sustainable Waste Management	3	0	0	3	
21MEE211T	Soft Robotics	3	0	0	3							Total Credits	15
21MEE212T	Heating, Ventilation and Air Conditioning Systems	3	0	0	3								



39. (f) Programme Articulation: B.Tech. in Mechanical Engineering

Course Code	Course Name	Program Outcomes (PO)												PSO		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
21MEC201T	Engineering Thermodynamics	3	3													
21MEC202T	Mechanics of Solids	3	2.6													
21MEC203T	Engineering Materials and Metallurgy	2.3		2.2		2										
21MEC204T	Manufacturing Processes and Metrology		2.7	2.5	3	2.5									2	
21MEC201L	Manufacturing Processes and Metrology Laboratory			1.4	3	1.5										
21MEC202L	Material Testing Laboratory				3	2				1						
21MEC205T	Fluid Mechanics and Machinery	3	3													
21MEC206T	Kinematics and Dynamics of Machines	3	3													
21MEC203L	Machine Dynamics Laboratory	3	2			1										
21MEC204L	Fluid Dynamics Laboratory	3								3						
21MEC205L	Mechanical Modelling and Assembly	2.2				3					2.8					
21MEC301T	Thermal Systems Engineering	3						1								
21MEC301P	Design of Mechanical Systems	3		3						2						
21MEC302T	Sensors and Control Systems	3				3								3	3	
21MEC301L	Thermal Power Systems Laboratory	3						3						1.8		
21MEC302L	Automation and Control Systems Laboratory			2.7		1				1.5				1	2	
21MEC301J	Heat and Mass Transfer	3			3											
21MEC302J	Finite Element Methods		3		3	2										
21MEC303T	Industry 4.0	1.4	2.5	2.3		1.5	3	2						2	2	
21MEE101T	Computer Aided Design - Computer Aided Manufacturing		2	2		1.8									1.5	
21MEE102T	Composite Materials and Characterization	2.2	1.5	3				2						2.3	2.5	
21MEE103T	Automation in Manufacturing Systems		3	3		2.3								2	2	
21MEE104T	Energy Engineering and Management				1			3						1.8		
21MEE105T	Solar Energy Systems	3	2					3						3		
21MEE201T	Foundation Skills in Integrated Product Development			3	1									2		
21MEE202T	Mechanical Vibrations	3	2.8												3	
21MEE203T	Industrial Tribology	1	3					2						2.5	2	
21MEE204T	Design for Manufacturing and Assembly	2	1	1											2.7	
21MEE205T	Electric Vehicle Technology	2						2	3					2		
21MEE206T	Biomechanics	2.6						2					2	2.2		
21MEE207T	Operations Research		1	3		1						3			3	
21MEE208T	Soft Computing Techniques and Applications in Mechanical Engineering	2.6			3	3									2.3	
21MEE209T	Process Planning and Cost Estimation	1	2.6		2			1							2.8	
21MEE210T	Mechatronics System Design		2	3	1										2.3	
21MEE211T	Soft Robotics	3	2.8	3										2	2.25	
21MEE212T	Heating, Ventilation and Air Conditioning Systems	2.8	2.5					3						2.6		
21MEE213T	Emerging Technologies in Automotive Systems							3						3		
21MEE214T	Gas Dynamics and Space Propulsion	1.6	1.6												1	
21MEE215T	Computational Fluid Dynamics: Theory with Applications	2.5	2.5			2									2.7	
21MEE216T	Modeling and Analysis of Thermal Systems	3						3						3		
21MEE217J	Microelectronics Thermal Management	3		3	1	3									1.4	
21MEE218T	Aerodynamics of Electric and Sports Vehicles	2.6													1.8	
21MEE219T	Green Energy Systems		3					2						3		
21MEE301T	Optimization in Engineering Design	3	3	3											2.6	
21MEE302T	Design of transmission Systems	2		3											3	
21MEE303T	Micro and Nano Machining	3			1.4	2									2	
21MEE304T	Machine Vision		2.8		2.5	2.5						3	3		2	
21MEE305T	Quality Management Systems	3	3	2.5		3	2.3			3		3	3	3	1.3	
21MEE306T	Energy Conversion Systems	3						3				3		2.3		

Course Code	Course Name	Program Outcomes (PO)												PSO		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
21MEE307T	Sustainable and Renewable Energy Systems	3						2.4						3		
21MEE308T	Sustainable Waste Management	2.8						2.7	2					2.7		
21GNP301L	Community Connect															
21MEP302L	Project	3	2	2	3	3	3	1	3	3	3	3	3			
21MEP303T	MOOC	3	2	2	3	3	3		3	3	3		3			
21MEP401L	Major Project	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
21MEP402L	Major Project	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
21MEP403L	Internship	3	2	2	3	3	3	1	3	3	3	3	3			
Program Average		2.6	2.4	2.5	2.3	2.3	3.0	2.2	2.8	2.5	3.0	3.0	2.9	2.4	2.3	



39. (g) Implementation Plan: B.Tech. in Mechanical Engineering

Semester - I						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21LEH101T	Communicative English	2	1	0	3	
21MAB101T	Calculus and Linear Algebra	3	1	0	4	
21PYB101J	Physics: Electromagnetic Theory, Quantum Mechanics, Waves and Optics	3	1	2	5	
21MES102L ¹	Engineering Graphics and Design	0	0	4	2	
21EES101T	Electrical and Electronics Engineering	3	1	0	4	
21CYM101T ¹	Environmental Science	1	0	0	0	
21PDM101L ¹	Professional Skills and Practices	0	0	2	0	
21LEM101T ¹	Constitution of India	1	0	0	0	
Total Credits					18	

Semester - II						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21LEH102T	Chinese	2	1	0	3	
21LEH103T	French					
21LEH104T	German					
21LEH105T	Japanese					
21LEH106T	Korean					
21LEH107T	Spanish					
21LEH108T	Russian					
21GNH101J	Philosophy of Engineering	1	0	2	2	
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4	
21CYB101J	Chemistry	3	1	2	5	
21MES101T	Engineering Mechanics	3	1	0	4	
21CSS101J	Programming for Problem Solving	3	0	2	4	
21BTB103T	Biology	2	0	0	2	
21MES101L ¹	Basic Civil and Mechanical Workshop	0	0	4	2	
21PDM102L ¹	General Aptitude	0	0	2	0	
21GNM101L ¹	Physical and Mental Health using Yoga	0	0	2	0	
21GNM102L ¹	National Service Scheme					
21GNM103L ¹	National Cadet Corps					
21GNM104L ¹	National Sports Organization					
Total Credits					26	

Semester - III						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4	
21MEC201T	Engineering Thermodynamics	3	0	0	3	
21MEC202T ²	Mechanics of Solids	3	1	0	4	
21MEC203T	Engineering Materials and Metallurgy	3	0	0	3	
21MEC204T	Manufacturing Processes and Metrology	3	0	0	3	
21MEC201L ¹	Manufacturing Processes and Metrology Laboratory	0	0	2	1	
21MEC202L ¹	Material Testing Laboratory	0	0	2	1	
21PDH209T ¹	Social Engineering	2	0	0	2	
21LEM201T ¹	Professional Ethics	1	0	0	0	
21PDM201L ¹	Verbal Reasoning	0	0	2	0	
21LEM202T ¹	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	2	1	0	3	
Total Credits					24	

Semester - IV						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MAB202T	Numerical Methods	3	1	0	4	
21CSC206T	Artificial Intelligence	2	1	0	3	
21MEC205T ²	Fluid Mechanics and Machinery	3	0	0	3	
21MEC206T	Kinematics and Dynamics of Machines	3	0	0	3	
	Professional Elective - I				3	
21MEC203L ¹	Machine Dynamics Laboratory	0	0	2	1	
21MEC204L ¹	Fluid Dynamics Laboratory	0	0	2	1	
21MEC205L ¹	Mechanical Modeling and Assembly	0	0	4	2	
21DCS201P ¹	Design Thinking and Methodology	1	2	0	3	
21PDM202L ¹	Critical and Creative Thinking Skills	0	0	2	0	
Total Credits					23	

Semester - V						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MAB301T	Probability and Statistics	3	1	0	4	
21MEC301T	Thermal Systems Engineering	3	1	0	4	
21MEC301P ¹	Design of Mechanical Systems	3	0	0	3	
21MEC302T ²	Sensors and Control Systems	3	0	0	3	
	Professional Elective - II				3	
O	Open Elective - I				3	
21MEC301L ¹	Thermal Power Systems Laboratory	0	0	2	1	
21MEC302L ¹	Automation and Control Systems Laboratory	0	0	2	1	
21PDM301L ¹	Analytical and Logical Thinking Skills	0	0	2	0	
21LEM301T ¹	Indian Art Form	1	0	0	0	
21GNP301L ¹	Community Connect	0	0	2	1	
Total Credits					23	

Semester - VI						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21CSS303T	Data Science	2	0	0	2	
21MEC301J	Heat and Mass Transfer	3	0	2	4	
21MEC302J ²	Finite Element Methods	3	0	2	4	
21MEC303T	Industry 4.0	3	0	0	3	
	Professional Elective - III				3	
21MEP302L ¹	Project	0	0	6	3	
21MEP303T ¹	MOOC	3	0	0		
O	Open Elective - II				3	
21PDM302L ¹	Employability Skills and Practices	0	0	2	0	
21LEM302T ¹	Indian Traditional Knowledge	1	0	0	0	
Total Credits					22	

Semester - VII						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21GNH401TA	Behavioral Psychology	2	1	0	3	
	Professional Elective - IV				3	
	Professional Elective - V				3	
O	Open Elective - III				3	
Total Credits					12	

Semester - VIII						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MEP401L	Major Project	0	0	30	15	
21MEP402L	Major Project	0	0	20	10	
21MEP403L	Internship#	0	0	10	5	
Total Credits					15	

#Students have to register either 21MEP401L or 21MEP402L and 21MEP403L both in eighth semester