

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 AND TECHNOLOGY

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

Kattankulathur, Chengalpattu District 603203,

Tamil Nadu, India

41. B.Tech. in Mechanical Engineering (Automation and Robotics)

41. (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>

41. (b) Program Educational Objectives (PEO)

PEO – 1	<i>Practice mechanical engineering in different disciplines towards system design, realization, automated manufacturing systems and robotics.</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>

41. (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

41. (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			
	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
PEO - 1	3	3	2	3	3	-	-	-	-	-	-	-	3	3	3
PEO - 2	-	-	3	-	-	3	3	3	-	-	-	3	3	2	-
PEO - 3	3	3	3	3	3	3	3	2	-	1	2	3	3	2	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>Ability to develop and implement new ideas on product design and development with the help of computer aided tools, automated manufacturing systems and robotics.</i>
PSO - 2	<i>Ability to adopt appropriate tools and techniques to solve the problems in various domains of mechanical engineering.</i>

41. (c) Program Structure: B.Tech. in Mechanical Engineering (Automation and Robotics)

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						

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						

Professional Elective Courses (E) (Any 5 Courses)						Project Work, Seminar, Internship in Industry / Higher Technical Institutions (P)					
Course Code	Course Title	Hours / Week			C	Course Code	Course Title	Hours / Week			C
		L	T	P				L	T	P	
21MEE361T	PLC and Virtual Instrumentation	2	0	2	3	21GNP301L ¹	Community Connect	0	0	2	1
21MEE362T	Mechatronics for Automation and Robotics	3	0	0	3	21MEP302L ¹	Project	0	0	6	3
21MEE363T	Industrial Internet of Things	3	0	0	3	21MEP303T ¹	MOOC	3	0	0	
21MEE364T	Advanced Automation Systems	3	0	0	3	21MEP401L	Major Project	0	0	30	15
21MEE365T	Robot System Design	3	0	0	3	21MEP402L	Major Project	0	0	20	10
21MEE366T	Robot Mechanics and Control	3	0	0	3	21MEP403L	Internship#	0	0	10	5
21MEE367T	Soft Robots	3	0	0	3	Total Credits					19
21MEE368T	Autonomous Robot Vehicles	3	0	0	3						
21MEE369J	Robot Applications and Programming	2	0	2	3						
21MEE370T	Microsystems Design and Applications	3	0	0	3						
Total Credits					15						

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	
21MEE361T	PLC and Virtual Instrumentation																
21MEE362T	Mechatronics for Automation and Robotics																
21MEE363T	Industrial Internet of Things																
21MEE364T	Advanced Automation Systems																
21MEE365T	Robot System Design																
21MEE366T	Robot Mechanics and Control																
21MEE367T	Soft Robots																
21MEE368T	Autonomous Robot Vehicles																
21MEE369J	Robot Applications and Programming																
21MEE370T	Microsystems Design and Applications																
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				

41. (g) Implementation Plan: B.Tech. in Mechanical Engineering (Automation and Robotics)

Semester - I						
Course Code	Course Title	Hours / Week			C	
		L	T	P		
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			C	
		L	T	P		
21LEH102T	Chinese					
21LEH103T	French					
21LEH104T	German					
21LEH105T	Japanese	2	1	0	3	
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					
21GNM102L ¹	National Service Scheme	0	0	2	0	
21GNM103L ¹	National Cadet Corps					
21GNM104L ¹	National Sports Organization					
Total Credits					26	

Semester - III						
Course Code	Course Title	Hours / Week			C	
		L	T	P		
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			C	
		L	T	P		
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	
E	Professional Elective - I	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	
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			C	
		L	T	P		
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	
E	Professional Elective - II	3	0	0	3	
O	Open Elective - I	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	
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			C	
		L	T	P		
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	
E	Professional Elective - III	3	0	0	3	
21MEP302L ¹	Project	0	0	6	3	
21MEP303T ¹	MOOC	3	0	0	3	
O	Open Elective - II	3	0	0	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			C	
		L	T	P		
21GNH401TA	Behavioral Psychology	2	1	0	3	
E	Professional Elective - IV	3	0	0	3	
E	Professional Elective - V	3	0	0	3	
O	Open Elective - III	3	0	0	3	
Total Credits					12	

Semester - VIII						
Course Code	Course Title	Hours / Week			C	
		L	T	P		
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