

ACADEMIC CURRICULA

POST GRADUATE DEGREE PROGRAMMES

Master of Technology

(Choice Based Flexible Credit System)

Regulations 2021

Volume – 21 Curriculum



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

33 M.Tech in Automation and Robotics

33. (a) Department Vision Statement

Stmnt - 1	<i>The department is committed to enable the students to experience an uncompromised educational journey that facilitates them to build successful careers and excel in the field of Electronics and Instrumentation Engineering with social and ethical standards</i>
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33. (b) Department Mission Statement

Stmnt - 1	<i>To have a scholarly and professional environment to make long lasting contributions for the advancement of knowledge.</i>
Stmnt - 2	<i>To have a world class teaching resources and laboratory facilities.</i>
Stmnt - 3	<i>To have an innovative, dynamic, flexible devising academic program and structure.</i>
Stmnt - 4	<i>To foster research and development, for the benefit of global community.</i>

33. (c) Program Education Objectives (PEO)

PEO - 1	<i>Graduates will be able to take up career in robotics and automation of industrial process with environment protection and safety concern</i>
PEO - 2	<i>Graduates will be able to solve technical problems to serve the society in a responsible and ethical manner.</i>
PEO - 3	<i>Graduates will be able to serve the end users with cutting edge technologies to meet industry standards.</i>
PEO - 4	<i>Graduates will be able to achieve broad and in depth knowledge of automation and robotics to practice and pursue higher studies.</i>
PEO - 5	<i>Graduates will be able to work as a team on multidisciplinary projects and excel in their career</i>

33. (d) Consistency of PEO's with Mission of the Department

	Mission Stmnt. - 1	Mission Stmnt. - 2	Mission Stmnt. - 3	Mission Stmnt. - 4
PEO - 1	2	2	3	2
PEO - 2	2	2	3	2
PEO - 3	2	3	2	2
PEO - 4	2	3	3	2
PEO - 5	2	2	2	2

33. (e) PO – Program Outcomes

PO - 1	<i>An ability to independently carry out research /investigation and development work to solve practical problems.</i>
PO - 2	<i>An ability to write and present a substantial technical report/document.</i>
PO - 3	<i>Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.</i>

33. (f) Consistency of PEO's with Program Outcomes (PO)

	Program Outcomes (PO)		
	1	2	3
PEO - 1	2		
PEO - 2	3		2
PEO - 3	3		1
PEO - 4	2	2	
PEO - 5	2	2	

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

33. (g) Programme Structure: M.Tech Automation and Robotics

Professional Core Courses (C)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EIC551J	Fundamentals of Robotics	3	0	2	4	
21EIC552J	Industrial Process Automation	3	0	2	4	
21EIC505T ²	Artificial Intelligence in Automation	3	0	0	3	
21EIC553J	Robot Programming	3	0	2	4	
21EIC504J	Real Time Embedded Systems	3	0	2	4	
21IPC501J ²	Research Methodology	2	1	2	4	
21EIC601T ¹	Case Studies	3	0	0	3	
Total Credits					26	

Professional Elective Courses (E) Course Delivery by online mode ⁽³⁾ (Any 7 Courses)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EIE501T ³	Advanced Power Electronics and Control	3	0	0		
21EIE506T ³	Model Based Development of Cyber - Physical Systems	3	0	0	3	
21EIE551T ³	Computer Vision and Image Processing	3	0	0		
21EIE552T ³	Cyber Security in Industrial Automation	3	0	0	3	
21EIE554T ³	Machine Learning and Data Analytics	3	0	0		
21EIE508T ³	VFD and HMI Programming	3	0	0	3	
21EIE555T ³	Embedded Automation Systems	3	0	0		
21EIE602T ³	Embedded Control Systems	3	0	0	3	
21EIE651T ³	Internet of Robotic Things	3	0	0		
21EIE604T ³	Deep Learning Technique	3	0	0	3	
21EIE652T ³	Smart Manufacturing	3	0	0		
21EIE553T ³	Industrial Data Communication	3	0	0	3	
21EIE653T ³	Autonomous Mobile Robotics	3	0	0		
21EIE600T ¹	Journal Publication	0	0	0		
21EIE654T ³	Modeling and Control of Robotic Systems	3	0	0	3	
21EIE605T ³	Virtual and Augmented Reality	3	0	0		
Total Credits					21	

Project Work, Internship In Industry / Higher Technical Institutions (P)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EIP501L	Specialization Project	0	0	40	20	
(OR)						
21EIP502L	Specialization Project	0	0	30	15	
21EIP503L	Domain Internship	0	0	10	5	
Total Credits					20	

Assessment by Open Book Examination ⁽²⁾						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EIC505T ²	Artificial Intelligence in Automation	3	0	0	3	
21IPC501J ²	Research Methodology	2	1	2	4	

Open Elective Courses (O)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
		3	0	0	3	
Total Credits					3	

100% assessment by the Department ⁽¹⁾						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EIC601T ¹	Case Studies	3	0	0	3	
21EIE600T ¹	Journal Publication	0	0	0	3	

All elective courses may be studied under MOOC platform

¹ 100% assessment by the Department

² Assessment by Open Book Examination

³ Course Delivery through online mode

33. (h) Implementation Plan: M.Tech Automation and Robotics

Semester - I						Semester - II					
Code	Course Title	Hours/Week				Code	Course Title	Hours/Week			
		L	T	P	C			L	T	P	C
21EIC551J	Fundamentals of Robotics	3	0	2	4	21EIC553J	Robot Programming	3	0	2	4
21EIC552J	Industrial Process Automation	3	0	2	4	21EIC504J	Real Time Embedded Systems	3	0	2	4
21EIC505T ²	Artificial Intelligence in Automation	3	0	0	3	21EIE552T ³	Cyber Security in Industrial Automation	3	0	0	3
21IPC501J ²	Research Methodology	2	1	2	4	21EIE554T ³	Machine Learning and Data Analytics	3	0	0	
21EIE501T ³	Advanced Power Electronics and Control	3	0	0	3	21EIE508T ³	VFD and HMI Programming	3	0	0	3
21EIE506T ³	Model Based Development of Cyber - Physical Systems	3	0	0		21EIE555T ³	Embedded Automation Systems	3	0	0	
21EIE551T ³	Computer Vision and Image Processing	3	0	0	3	21EIE602T ³	Embedded Control Systems	3	0	0	3
Total Credits					18	21EIE651T ³	Internet of Robotic Things	3	0	0	
						Total Credits					17
Semester - III						Semester - IV					
Code	Course Title	Hours/Week				Code	Course Title	Hours/Week			
		L	T	P	C			L	T	P	C
	Open Elective	3	0	0	3	21EIP501L	Specialization Project	0	0	40	20
21EIE604T ³	Deep Learning Technique	3	0	0	3	(OR)					
21EIE652T ³	Smart Manufacturing	3	0	0		21EIP502L	Specialization Project	0	0	30	15
21EIE553T ³	Industrial Data Communication	3	0	0	3	21EIP503L	Domain Internship	0	0	10	5
21EIE653T ³	Autonomous Mobile Robotics	3	0	0		Total Credits					20
21EIE600T ¹	Journal Publication	0	0	0	3	# Students must register either 21EIP501L or 21EIP502L and 21EIP503L both in fourth semester					
21EIE654T ³	Modeling and Control of Robotic Systems	3	0	0							
21EIE605T ³	Virtual and Augmented Reality	3	0	0	3						
21EIC601T ¹	Case Studies	3	0	0							
Total Credits					15						

33. (i) Program Articulation Matrix: M.Tech Automation and Robotics

Course Code	Course Name	Programme Outcomes		
		1	2	3
21EIC551J	Fundamentals of Robotics	2.75	0.5	
21EIC552J	Industrial Process Automation	2.67	1.33	0.67
21EIC505T	Artificial Intelligence in Automation	2	1	0.67
21EIC553J	Robot Programming	2.75	0.5	
21EIC504J	Real Time Embedded Systems	1	0.25	1.75
21EIC601T	Case Studies			
21EIE501T	Advanced Power Electronics and Control	2		1
21EIE506T	Model Based Development of Cyber - Physical Systems	3		2
21EIE508T	VFD and HMI programming	1.67		1.33
21EIE551T	Computer Vision and Image Processing	2.67	0.67	1.33
21EIE552T	Cyber Security in Industrial Automation	3		2
21EIE553T	Industrial Data Communication	3		0.67
21EIE554T	Machine Learning and Data Analytics	2.67	0.67	1.33
21EIE555T	Embedded Automation Systems	3		0.67
21EIE602T	Embedded Control Systems	1	0.67	2
21EIE604T	Deep Learning Technique	2.67	0.67	1.33
21EIE605T	Virtual and Augmented Reality	1	0.67	2
21EIE651T	Internet of Robotic Things	3	1.38	
21EIE652T	Smart manufacturing	0.67	0.67	2
21EIE653T	Autonomous Mobile Robotics	3	1.33	
21EIE654T	Modeling and Control of Robotic Systems	2		1
21EIE600T	Journal Publication			
21IPC501J	Research Methodology	3	2.6	
	Open Elective			
21EIP501L	Specialization Project			
21EIP502L	Specialization Project			
21EIP503L	Domain Internship			
Program Average				

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



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