

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

31 M.Tech in Power Electronics and Drives

31. (a) Department Vision Statement

Stmnt - 1	<i>To impart quality education in the field of Electrical & Electronics Engineering and to produce globally competent engineers to serve the society.</i>
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31. (b) Department Mission Statement

Stmnt - 1	<i>To educate the student to become better practicing engineers to meet global excellence.</i>
Stmnt - 2	<i>To provide better environment through latest developments in electrical engineering involving problem solving, design, practice and training.</i>
Stmnt - 3	<i>To motivate the graduates to become a good leader, designer and researcher through industry-oriented trainings with social and ethical responsibilities.</i>

31. (c) Program Education Objectives (PEO)

PEO - 1	<i>Graduates will be equipped with adequate knowledge and skills in the chosen areas so as to excel in career and advance professionally.</i>
PEO - 2	<i>Graduates will exhibit eminence in multidisciplinary research of social relevance with sustainable development</i>
PEO - 3	<i>Graduates will be able to explore new opportunities and take up leading and challenging roles as entrepreneurs and administrators for technological advancement.</i>

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

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

31. (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>

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

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

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

31. (g) Programme Structure: M.Tech Power Electronics and Drives

Professional Core Courses (C)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EEEC551T	Advanced Power Semiconductor Devices and Protection	3	0	0	3	
21EEEC552J	Design and Analysis of Power Converters	3	0	2	4	
21EEEC553J ²	Electrical Machine Modeling and Analysis	3	0	2	4	
21EEEC554J	Controllers for Power Electronic Systems	3	0	2	4	
21EEEC555J	Electric Drive Systems	3	0	2	4	
21IPC501J ²	Research Methodology	2	1	2	4	
21EEEC601T ¹	Case Studies	3	0	0	3	
Total Credits					26	
Project Work, Internship In Industry / Higher Technical Institutions (P)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EEP501L	Specialization Project	0	0	40	20	
(OR)						
21EEP502L	Specialization Project	0	0	30	15	
21EEP503L	Domain Internship	0	0	10	5	
Total Credits					20	
100% assessment by the Department (¹)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EEEC601T ¹	Case Studies	3	0	0	3	
21EEEE600T ¹	Journal Publication	0	0	0	3	
Assessment by Open Book Examination (²)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EEEC553J ²	Electrical Machine Modeling and Analysis	3	0	2	4	
21IPC501J ²	Research Methodology	2	1	2	4	

Professional Elective Courses (E) (Any 7 Courses)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EEEE501T	Flexible AC Transmission Systems	3	0	0	3	
21EEEE502T	High Voltage Direct Current Transmission Systems	3	0	0		
21EEEE505T	Electric Vehicle and Energy Storage Systems	3	0	0	3	
21EEEE504T	Power Quality Assessment and Enhancement	3	0	0		
21EEEE507T	Energy Audit and Management for Electrical Systems	3	0	0		
21EEEE509T	Special Machines and their Controllers	3	0	0	3	
21EEEE503T	Applications of Machine Learning for Energy Systems	3	0	0		
21EEEE506T	Advanced Digital Signal Processing	3	0	0		
21EEEE508T	Soft Computing Techniques	3	0	0		
21EEEE671T	Control and Integration of Renewable Energy Systems	3	0	0	3	
21EEEE673T	Smart Grid Technologies	3	0	0		
21EEEE672T	Applications of Power Converters in Emerging Technologies	3	0	0	3	
21EEEE674T	Power Converters and Controllers in Microgrid	3	0	0		
21EEEE675T	Intelligent Controllers for Power Conversion Systems	3	0	0	3	
21EEEE600T ¹	Journal Publication	0	0	0		
21EEEE676T	Digital Control in Power Electronic Systems	3	0	0	3	
21EEEE677T	Realization of Power Electronic Converters	3	0	0		
Total Credits					21	
Open Elective Courses (O) Course Delivery by online mode (³)						
Course Code	Course Title	Hours/Week			C	
		L	T	P		
21EEEO601T ³	Electric Vehicle Technology	3	0	0	3	
21EEEO602T ³	Modern Optimization Techniques	3	0	0	3	
21EEEO603T ³	E- Waste Management Techniques	3	0	0	3	
21EEEO604T ³	Green Energy Technologies	3	0	0	3	
21EEEO605T ³	Energy Storage Technologies	3	0	0	3	
Total Credits					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

31. (h) Implementation Plan: M.Tech Power Electronics and Drives

Semester - I							Semester - II						
Code	Course Title	Hours/Week					Code	Course Title	Hours/Week				
		L	T	P	C				L	T	P	C	
21EEEC551T	Advanced Power Semiconductor Devices and Protection	3	0	0	3		21EEEC554J	Controllers for Power Electronic Systems	3	0	2	4	
21EEEC552J	Design and Analysis of Power Converters	3	0	2	4		21EEEC555J	Electric Drive Systems	3	0	2	4	
21EEEC553J ²	Electrical Machine Modeling and Analysis	3	0	2	4		21EEEE504T	Power Quality Assessment and Enhancement	3	0	0		
21IPC501J ²	Research Methodology	2	1	2	4		21EEEE507T	Energy Audit and Management for Electrical Systems	3	0	0		3
21EEEE501T	Flexible AC Transmission Systems	3	0	0			21EEEE509T	Special Machines and their Controllers	3	0	0		
21EEEE502T	High Voltage Direct Current Transmission Systems	3	0	0		3	21EEEE503T	Applications of Machine Learning for Energy Systems	3	0	0		3
21EEEE505T	Electric Vehicle and Energy Storage Systems	3	0	0			21EEEE506T	Advanced Digital Signal Processing	3	0	0		
Total Credits						18	21EEEE508T	Soft Computing Techniques	3	0	0		
							21EEEE671T	Control and Integration of Renewable Energy Systems	3	0	0		3
							21EEEE673T	Smart Grid Technologies	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		21EEP501L	Specialization Project (OR)	0	0	40	20	
21EEEE672T	Applications of Power Converters in Emerging Technologies	3	0	0		3	21EEP502L	Specialization Project	0	0	30	15	
21EEEE674T	Power Converters and Controllers in Microgrid	3	0	0			21EEP503L	Domain Internship	0	0	10	5	
21EEEE675T	Intelligent Controllers for Power Conversion Systems	3	0	0		3	Total Credits						20
21EEEE600T ¹	Journal Publication	0	0	0									
21EEEE676T	Digital Control in Power Electronic Systems	3	0	0		3							
21EEEE677T	Realization of Power Electronic Converters	3	0	0									
21EEEC601T ¹	Case Studies	3	0	0	3								
Total Credits						15							

Students must register either 21EEP501L or 21EEP502L and 21EEP503L both in fourth semester

31. (i) Program Articulation Matrix: M.Tech Power Electronics and Drives

Course Code	Course Name	Programme Outcomes		
		1	2	3
21EEEC551T	Advanced Power Semiconductor Devices and Protection	3	1.5	2
21EEEC552J	Design and Analysis of Power Converters	3	2	2
21EEEC553J	Electrical Machine Modeling and Analysis	3	1.8	1.8
21EEEC554J	Controllers for Power Electronic Systems	2.8	2	2.8
21EEEC555J	Electric Drive Systems	3	1.8	2
21EEEC601T	Case Studies			
21EEEE501T	Flexible AC Transmission Systems	3	1.3	2.3
21EEEE502T	High Voltage Direct Current Transmission Systems	2.3	2.3	1.3
21EEEE503T	Applications of Machine Learning for Energy Systems	2	0.6	1.8
21EEEE504T	Power Quality Assessment and Enhancement	3	1.3	2
21EEEE505T	Electric Vehicle and Energy Storage Systems	2	2.8	2.8
21EEEE506T	Advanced Digital Signal Processing	2	0.5	2.8
21EEEE507T	Energy Audit and Management for Electrical Systems	2	2	1.6
21EEEE508T	Soft Computing Techniques	2.3	2.8	2.5
21EEEE509T	Special Machines and their Controllers	3	2	2
21EEEE671T	Control and Integration of Renewable Energy Systems	3	1.3	1.3
21EEEE672T	Applications of Power Converters in Emerging Technologies	2	1.3	2.7
21EEEE673T	Smart Grid Technologies	2.5	1.5	1.5
21EEEE674T	Power Converters and Controllers in Microgrid	2.7	1.7	2
21EEEE675T	Intelligent Controllers for Power Conversion Systems	3	2	3
21EEEE676T	Digital Control in Power Electronic Systems	1	1.3	2
21EEEE677T	Realization of Power Electronic Converters	3	2	3
21EEEE600T	Journal Publication			
21IPC501J	Research Methodology	3	2.6	
	Open Elective			
21EEP501L	Specialization Project			
21EEP502L	Specialization Project			
21EEP503L	Domain Internship			
Program Average				

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



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