

ACADEMIC CURRICULA
UNDERGRADUATE/ INTEGRATED
POST GRADUATE DEGREE
PROGRAMMES

(With exit option of Diploma)

(Choice Based Flexible Credit System)

Regulations 2021

Volume – 1

(Revised on July 2024)



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

38. B.Tech. in Electronics and Instrumentation Engineering

38. (a) Mission of the Department

Mission Stmt – 1	<i>To have a scholarly and professional environment to make long lasting contributions for the advancement of knowledge.</i>
Mission Stmt – 2	<i>To foster research and development for the benefit of global community.</i>
Mission Stmt – 3	<i>To have an innovative, dynamic, flexible devising academic program and structure.</i>

38. (b) Program Educational Objectives (PEO)

PEO – 1	<i>Graduates will be able to take up career in optimization and automation of industrial process control 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 Instrumentation 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>

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

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

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

38. (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	2	3	-	3	2	3	2	2	2	2	3	3	2	3
PEO - 2	3	3	2	3	2	3	2	3	2	2	-	-	2	2	3
PEO - 3	3	3	2	2	3	-	-	3	-	3	3	-	3	2	3
PEO - 4	3	2	3	2	-	-	-	2	-	2	-	3	2	3	2
PEO - 5	3	3	3	3	-	2	-	2	3	3	3	3	2	3	2

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	<i>Model and perform analysis of any given system and to design a suitable control methodology based on the specifications for an enhanced process results</i>
PSO - 2	<i>Apply the knowledge gained on transducers in any given field through the process of design, development, and implementation of instrumentation system.</i>
PSO - 3	<i>Design, Develop, Calibrate and test electronics engineering systems and utilize the modern computational tools to assess its effect on societal, health and environmental safety and consequent responsibilities relevant to engineering practices</i>

38. (e) Program Structure: B.Tech. in Electronics and Instrumentation 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					
21LEH103T	French					
21LEH104T	German					
21LEH105T	Japanese					
21LEH106T	Korean	2	1	0	3	
21LEH107T	Spanish					
21LEH108T	Russian					
21GNH101J	Philosophy of Engineering	1	0	1	2	
21GNH401T	Behavioural Psychology	2	1	0	3	
21PDH209T ¹	Social Engineering	2	0	0	2	
Total Credits 13						
Engineering Science Courses (S)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
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	
21DCS201P ¹	Design Thinking and Methodology	1	2	0	3	
21CSS101J	Programming for Problem Solving	3	0	2	4	
21EIS204T	Industrial Data Communication	3	0	0	3	
21CSS303T	Data Science	2	0	0	2	
Total Credits 20						
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						

Basic Science Courses (B)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21PYB101J	Physics: Electromagnetic Theory, Quantum Mechanics, Waves and Optics	3	1	2	5	
21CYB101J	Chemistry	3	1	2	5	
21MAB101T	Calculus and Linear Algebra	3	1	0	4	
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4	
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4	
21MAB203T	Probability and Stochastic Processes	3	1	0	4	
21BTB103T	Biology	2	0	0	2	
Total Credits 28						
Open Elective Courses (O) (Any 3 Courses)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21EIO131J	Virtual Instrumentation	2	0	2	3	
21EIO132T	Analytical Instrumentation	3	0	0	3	
21EIO133T	Industrial Automation Systems	3	0	0	3	
21EIO134T	Introduction to Sensors	3	0	0	3	
21EIO135T	Introduction to MEMS	3	0	0	3	
21EIO136J	PLC for Industrial Automation	2	0	2	3	
21EIO138T	Logical Foundation of Cyber Physical Systems	3	0	0	3	
Total Credits 09						
Professional Core Courses (C)						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21EIC101J	Sensors and Actuators	3	0	2	4	
21EIC201J ²	Digital Principles and System Design	3	0	2	4	
21EIC202T	Electrical and Electronic Measurements and Instrumentation	3	0	0	3	
21EIC203J	Electronics for Analog Signal Processing	3	0	2	4	
21EIC205J ²	Analog Integrated Circuits	3	0	2	4	
21EIC206J	Control Systems Design and Analysis	3	0	2	4	
21EIC301P ¹	Embedded System Design	2	0	4	4	
21EIC302J	Process Control	3	0	2	4	
21EIC303T ²	Discrete Time Signal Processing	3	0	0	3	
21EIC304T	Industrial Instrumentation	3	0	0	3	
21EIC305J	Industrial Process Automation Systems	3	0	2	4	
21EIC306J ²	Instrumentation System Design	2	0	2	3	
21EIC401J	Image Processing	2	0	2	3	
21EIC402J	Power Electronics and its Applications	2	0	2	3	
21CSC206T	Artificial Intelligence	2	1	0	3	
Total Credits 53						
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	
21EIP302L ¹	Project	0	0	6	3	
21EIP303T ¹	MOOC	3	0	0		
21EIP401L	Major Project	0	0	30		15
21EIP402L	Major Project	0	0	20	10	
21EIP403L	Internship#	0	0	10	5	
Total Credits 19						

Professional Elective Courses (E) (Any 6 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	
21EIE201T	Reliability and Safety Engineering	3	0	0	3	21EIE310T	Intelligent Systems and Control	3	0	0	3
21EIE202T	Renewable Energy	3	0	0	3	21EIE311T	State Space Control Design	3	0	0	3
21EIE203T	Fundamental of MEMS	3	0	0	3	21EIE312T	Industrial Processes and Control	3	0	0	3
21EIE204J	Fundamentals of Data Structures and Algorithm	2	0	2	3	21EIE313T	Deep Learning Techniques	3	0	0	3
21EIE205T	Transducers for biomedical applications	3	0	0	3	21EIE314T	Biomedical Signal and Image Processing	3	0	0	3
21EIE301T	Building Automation System	3	0	0	3	21EIE402J	Electro-pneumatics and Hydraulics	2	0	2	3
21EIE302T	Electrical Energy Management and Conversion	3	0	0	3	21EIE403T	Multi Sensor and Decision Systems	3	0	0	3
21EIE303T	Automotive Sensors and Smart Systems	3	0	0	3	21EIE404T	System on Chip	3	0	0	3
21EIE304T	Machine Learning Algorithms	3	0	0	3	21EIE405T	Process Data Analytics	3	0	0	3
21EIE305T	Biomedical Devices and Instrumentation	3	0	0	3	21EIE406T	System Identification	3	0	0	3
21EIE306T	Industrial Internet of Things	3	0	0	3	21EIE407T	Machine Vision Systems	3	0	0	3
21EIE307T	Modern Control Techniques	3	0	0	3	21EIE408T	Non-linear Control system Design	3	0	0	3
21EIE308T	Fault Diagnosis and Tolerance System	3	0	0	3	21EIE409T	Bio-optical Instrumentation	3	0	0	3
21EIE309T	E-Vehicle Technology	3	0	0	3	21EIE410T	Bio-mechatronics	3	0	0	3
						21EIE411T	Virtual and Augmented Reality	3	0	0	3
						Total Credits					18



38. (f) Programme Articulation: B.Tech. in Electronics and Instrumentation 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
21EIC101J	Sensors and Actuators	2.6	2	-	-	-	-	-	-	-	-	-	-	-	2	-
21EIC201J	Digital Principles and System Design	3	2	3	-	-	-	-	-	-	-	-	-	-	1.6	-
21EIC202T	Electrical and Electronic Measurements and Instrumentation	2.4	2	2	-	-	-	-	-	-	-	-	-	-	2	1
21EIC203J	Electronics for Analog Signal Processing	3	1.4	-	-	-	-	-	-	-	-	-	-	-	2	-
21EIS204T	Industrial Data Communication	3	1.4	-	-	-	-	-	-	-	-	-	-	-	1.4	-
21EIC205J	Analog Integrated Circuits	3	1.7	-	2	-	-	-	-	-	-	-	-	-	1.6	-
21EIC206J	Control Systems Design and Analysis	2.8	-	-	2	2	-	-	-	-	-	-	-	2.2	-	-
21EIC301P	Embedded System Design	2	2	3	3	-	-	-	-	3	-	-	-	2	3	-
21EIC302J	Process Control	2	2	2	-	-	-	-	-	-	-	-	-	2.8	-	-
21EIC303T	Discrete Time Signal Processing	2.8	3	2	-	-	-	-	-	-	-	-	-	-	1.2	-
21EIC304T	Industrial Instrumentation	3	2	-	-	-	-	-	-	-	-	-	-	-	3	-
21EIC305J	Industrial Process Automation Systems	3	-	2	1.3	-	-	-	-	-	-	-	-	2.75	-	2
21EIC306J	Instrumentation System Design	2	1.8	3	-	-	-	-	-	-	-	-	-	2	2	-
21EIC401J	Image Processing	2	2	-	2	-	-	-	-	-	-	-	-	-	-	1
21EIC402J	Power Electronics and its Applications	3	2	-	-	2	-	-	-	-	-	-	-	-	1	-
21EIE201T	Reliability and Safety Engineering	2.8	-	2.2	-	-	-	-	-	-	-	-	-	-	-	3
21EIE202T	Renewable Energy	2.2	2.2	-	-	-	-	-	-	-	-	-	-	-	-	3
21EIE203T	Fundamental of MEMS	3	-	2	-	-	-	-	-	-	-	-	-	-	2	-
21EIE204J	Fundamentals of Data Structures and Algorithm	2.25	2	2	2	-	-	-	-	-	-	-	-	-	2	2
21EIE205T	Transducers for Biomedical Applications	2.8	2	-	-	-	-	-	-	-	-	-	-	-	2.2	-
21EIE301T	Building Automation System	3	-	2	-	-	-	-	-	-	-	-	-	-	3	3
21EIE302T	Electrical Energy Management and Conversion	2.8	3	-	-	-	-	-	-	-	-	-	-	3	-	-
21EIE303T	Automotive Sensors and Smart Systems	3	-	2.3	-	-	-	-	-	-	-	-	-	1.5	2.5	3
21EIE304T	Machine Learning Algorithms	2.7	2.3	2	1	2	-	-	-	-	-	-	-	-	-	2
21EIE305T	Biomedical Devices and Instrumentation	3	2	-	-	-	-	-	-	-	-	-	-	2	3	2
21EIE306T	Industrial Internet of Things	3	-	-	2	-	-	-	-	-	-	-	-	-	3	-
21EIE307T	Modern Control Techniques	2	-	2	2	-	-	-	-	-	-	-	-	3	-	-
21EIE308T	Fault Diagnosis and Tolerance System	3	-	2.2	-	-	-	-	-	-	-	-	-	2	-	-
21EIE309T	E-Vehicle Technology	2	-	2	2	-	-	-	-	-	-	-	-	-	-	2
21EIE310T	Intelligent Systems and Control	3	-	2	-	-	-	-	-	-	-	-	-	1.8	-	-
21EIE311T	State Space Control Design	3	-	-	2	-	-	-	-	-	-	-	-	-	2.2	-
21EIE312T	Industrial Processes and Control	2.8	2	2	-	1	-	-	-	-	-	-	2	-	2	-
21EIE313T	Deep Learning Techniques	2.8	-	-	2.2	1	-	-	-	-	-	-	-	-	-	3
21EIE314T	Biomedical Signal and Image Processing	3	1	-	2	-	-	-	-	-	-	-	-	1	-	2.5
21EIE401T	Cyber Security for Industrial Automation	3	-	3	-	-	-	-	-	-	-	-	-	3	-	-
21EIE402J	Electro-pneumatics and Hydraulics	2	2	2	-	-	-	-	-	-	-	-	-	3	-	-
21EIE403T	Multi-sensor and Decision Systems	3	-	-	2.2	1	-	-	-	-	-	-	-	-	-	3
21EIE404T	System on Chip	3	-	2	-	-	-	-	-	-	-	-	-	1.3	2.5	-
21EIE405T	Process Data Analytics	2	2.7	2.25	-	-	-	-	-	-	-	-	-	2	2	3
21EIE406T	System Identification	2	2.3	3	-	-	-	-	-	-	-	-	-	2	-	-
21EIE407T	Machine Vision Systems	2.8	-	3	-	1	-	-	-	-	-	-	-	1	-	-
21EIE408T	Non-linear Control System Design	3	-	3	-	-	-	-	-	-	-	-	-	3	-	-
21EIE409T	Bio-optical Instrumentation	2.4	-	-	2	-	-	-	-	-	-	-	-	-	2	2
21EIE410T	Bio-mechatronics	3	-	2	-	-	-	-	-	-	-	-	-	2	2	-
21EIE411T	Virtual and Augmented Reality	2	-	3	-	-	-	-	-	-	-	-	-	-	-	3
21GNP301L	Community Connect	3	2	2	-	3	-	-	3	3	3	-	-	1.6	1	1.6
21EIP302L	Project	3	3	2	2.5	3	2.7	3	2	3	3	3	2	1.4	2	2
21EIP303T	MOOC	3	2	2	-	-	-	-	-	2	3	-	-	1.4	1	1.8
21EIP401L /21EIP402L	Major Project	3	3	2	2.5	3	2.7	3	2	3	3	3	2	1.4	2	2
21EIP403L	Internship	3	2	2	-	-	-	-	-	3	3	3	2.2	1.6	1.2	1.8
Program Average		2.7	2.1	2.28	2.04	2.11	2.7	3	2.33	2.83	2.5	3	2.05	2.03	2.01	2.26

38. (g) Implementation Plan: B.Tech. in Electronics and Instrumentation 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 - III						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4	
21EIC201J ²	Digital Principles and System Design	3	0	2	4	
21EIC202T	Electrical and Electronic Measurements and Instrumentation	3	0	0	3	
21EIC203J	Electronics for Analog Signal Processing	3	0	2	4	
21PDH209T ¹	Social Engineering	2	0	0	2	
21EIS204T	Industrial Data Communication	3	0	0	3	
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 23						
Semester - V						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21EIC301P ¹	Embedded System Design	2	0	4	4	
21EIC302J	Process Control	3	0	2	4	
21EIC303T ²	Discrete Time Signal Processing	3	0	0	3	
21EIC304T	Industrial Instrumentation	3	0	0	3	
	Professional Elective – II				3	
	Open Elective – I				3	
21GNP301L ¹	Community Connect	0	0	2	1	
18PDM301L ¹	Analytical and Logical Thinking Skills	0	0	2	0	
21LEM301T ¹	Indian Art Form	1	0	0	0	
Total Credits 21						
Semester - VII						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21GNH401T	Behavioral Psychology	2	1	0	3	
21EIC401J	Image Processing	2	0	2	3	
21EIC402J	Power Electronics and its Applications	2	0	2	3	
	Professional Elective-V				3	
	Professional Elective-VI				3	
	Open Elective-III				3	
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	
21EIC101J	Sensors and Actuators	3	0	2	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 - IV						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21MAB203T	Probability and Stochastic Processes	3	1	0	4	
21CSC206T	Artificial Intelligence	2	1	0	3	
21EIC205J ²	Analog Integrated Circuits	3	0	2	4	
21EIC206J	Control Systems Design and Analysis	3	0	2	4	
	Professional Elective-I				3	
21DCS201P ¹	Design Thinking and Methodology	1	2	0	3	
21PDM202L ¹	Critical and Creative Thinking Skills	0	0	2	0	
Total Credits 21						
Semester - VI						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21CSS303T	Data Science	2	0	0	2	
21EIC305J	Industrial Process Automation Systems	3	0	2	4	
21EIC306J ²	Instrumentation System Design	2	0	2	3	
	Professional Elective-III				3	
	Professional Elective-IV				3	
	Open Elective-II				3	
21EIP302L ¹	Project	0	0	6	3	
21EIP303T ¹	MOOC	3	0	0		
21PDM302L ¹	Employability Skills and Practices	0	0	2	0	
21LEM302T ¹	Indian Traditional Knowledge	1	0	0	0	
Total Credits 21						
Semester - VIII						
Course Code	Course Title	Hours / Week				
		L	T	P	C	
21EIP401L	Major Project	0	0	30	15	
21EIP402L	Major Project	0	0	20	10	
21EIP403L	Internship#	0	0	10	5	
Total Credits 15						

#Students have to register either 21EIP401L or 21EIP402L and 21EIP403L both in eighth semester



SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Kattankulathur, Chengalpattu District 603203, Tamil Nadu, India