ACADEMIC CURRICULA

UNDERGRADUATE DEGREE PROGRAMME

Bachelor of Technology
In
Electronics and Computer Engineering

(B.Tech. - Four Years)

(Choice Based Flexible Credit System)

Regulations 2021

CURRICULUM

SCHOOL OF ELECTRICAL AND ELECTRONICS ENGINEERING

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Kattankulathur, Chengalpattu District 603203, Tamil Nadu, India

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
Kattankulathur, Chengalpattu District 603203, Tamil Nadu, India

B.Tech. in Electronics and Computer Engineering

(a) Mission of the Department

Mission Stmt - 1	*Build an educational process that is well suited to local needs as well as satisfies the national and international accreditation requirements.*
Mission Stmt - 2	*Attract the qualified professionals and retain them by building an environment that fosters work freedom and empowerment.*
Mission Stmt - 3	*With the right talent pool, create knowledge and disseminate, get involved in collaborative research with reputed universities and produce competent graduands.*

(b) Program Educational Objectives (PEO)

Graduates within 4 years of graduation will / should demonstrate:

PEO – 1	*Apply the acquired knowledge and skills in solving real-world engineering problems, considering national/global and societal issues such as health, environment, and safety.*
PEO – 2	*Devise novel computer-based embedded solutions/ products which are economically feasible and socially relevant.*
PEO – 3	*Develop an attitude toward pursuing knowledge and advanced education for sustained career advancement to adapt to emerging fields.*
PEO – 4	*Demonstrate leadership qualities and effective communication skills to work in a team of enterprising people in a multidisciplinary and multicultural environment with strong adherence to professional ethics.*

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

	Mission Statement – 1	Mission Statement - 2	Mission Statement – 3
PEO - 1	*1*	*2*	*3*
PEO - 2	*3*	*3*	*3*
PEO - 3	*2*	*1*	*3*
PEO - 4	*3*	*3*	*3*

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

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

	Program Outcomes (PO)														
	Graduate Attributes (GA)												*Program Specific Outcomes (PSO)*		
	Engineering Knowledge	*Problem Analysis*	*Design & Development*	*Analysis, Design, Research*	*Modern Tool Usage*	*Society & Culture*	*Environment & Sustainability*	*Ethics*	*Individual & Team Work*	*Communication*	*Project Mgt. & Finance*	*Life Long Learning*	PSO 1: Problem-Solving Skills	PSO 2: Professional Skills	PSO 3: Successful Career and Entrepreneurship
PEO - 1	*3*	*3*				*3*	*3*	*2*					*3*		*3*
PEO - 2			*3*	*3*	*3*	*3*			*2*		*3*		*3*	*3*	
PEO - 3				*3*	*3*		*2*	*2*		*2*		*3*		*2*	
PEO - 4								*3*	*3*	*3*	*3*			*3*	*3*

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

PSO – Program Specific Outcomes (PSO)

PSO – 1	***Problem-Solving Skills:*** Apply the concepts of electronics, signal processing, embedded systems and programming using latest hardware and software tools to design, develop and implement application-oriented computing systems.
PSO – 2	***Professional Skills:*** Demonstrate analytical and managerial skills to arrive at cost effective and optimum solutions either independently or as a team.
PSO – 3	***Successful Career and Entrepreneurship:*** Carry out their professional responsibilities in an ethical manner giving due consideration to societal and environmental well-being.

(c) **Program Structure: B.Tech. in Electronics and Computer Engineering**

1. 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 Language	2	1	0	3
21LEH103T	French Language				
21LEH104T	German Language				
21LEH105T	Japanese Language				
21LEH106	Korean Language				
21LEH107T	Spanish Language				
21GNH101J	Philosophy of Engineering	1	0	2	2
21PDH201T	Social Engineering	2	0	0	2
21GNH401T	Behavioral Psychology	2	1	0	3
Total Learning Credits					13

2. 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 Process	3	1	0	4
21MAB302T	Discrete Mathematics	3	1	0	4
21BTB103T	Biology	2	0	0	2
Total Learning Credits					32

3. Engineering Science Courses (S)					
Course Code	Course Title	Hours/ Week L	T	P	C
21MES101L	Basic Civil and Mechanical Workshop	1	0	4	3
21MES102L	Engineering Graphics and Design	1	0	4	3
21EES101T	Electrical and Electronics Engineering	3	1	0	4
21CSS101J	Programming for Problem Solving	3	0	4	5
21CSS201T	Computer Organization and Architecture	3	0	0	3
21DCS201P	Design Thinking and Methodology	**1**	**2**	**0**	**3**
21CSS303T	Data Science	2	0	0	2
Total Learning Credits					23

4. Professional Core Courses (C)					
Course Code	Course Title	Hours/ Week L	T	P	C
21ECC112J	Systems Programming	2	0	2	3
21ECC212T	Data Structures and Algorithms	3	0	0	3
21ECC213J	Analog Devices and Circuits	3	0	2	4
21ECC203J	Digital logic Design	2	0	2	3
21ECC204T	Signal Processing	3	0	0	3
21ECC217J	Object Oriented Design and Programming	2	0	2	3
21ECC233L	Data Structures Lab	0	0	4	2
21ECC312T	Hardware Interfacing and Networking	3	0	0	3
21ECC313P	Embedded Microcontrollers	3	2	0	4
21ECC314J	Embedded Hardware and Operating systems	2	0	2	3
21ECC315T	Database Management Systems	3	0	0	3
21ECC317T	Data Communication and PLC	3	0	0	3
21ECC412J	Programming with Python	2	0	2	3
21ECC413T	FPGA based Embedded Systems	3	0	0	3
21CSC206T	Artificial Intelligence	2	1	0	3
Total Learning Credits					46

5. Professional Elective Courses (E) (Any 6 Elective Courses)					
Course Code	Course Title	Hours/ Week L	T	P	C
Sub-Stream: Electronics Engineering					
21ECE210P	IoT System Design	2	1	0	3
21ECE211T	Electromagnetics and Antenna Theory	3	0	0	3
21ECE212T	Control Systems: Theory and Applications	3	0	0	3
21ECE220T	Wireless and Optical Sensors	3	0	0	3
21ECE310J	Applied Digital Signal Processing	2	0	2	3
21ECE311T	Digital Communication Systems	3	0	0	3
21ECE421T	Wireless Communication Networks	3	0	0	3
21ECE410T	ASIC Design	3	0	0	3
21ECE411T	Embedded Linux	3	0	0	3
21ECE412T	Algorithms for Cryptography	3	0	0	3
Sub-Stream: Computer Engineering					
		L	*T*	*P*	*C*
21ECE231T	Principles of Cloud Computing	3	0	0	3
21ECE232T	Data Analysis and Visualization	3	0	0	3
21ECE305J	Machine Learning Algorithms	2	0	2	3
21ECE330T	Full Stack Development	3	0	0	3
21ECE331T	Data Mining and Analytics	3	0	0	3
21ECE332J	Multi-Core Architecture and Programming	2	0	2	3
21ECE333T	Hardware Software Co-Design	3	0	0	3
21ECE304T	Cyber Physical System Framework	3	0	0	3
21ECE430T	Introduction to Virtual Computing	3	0	0	3
21ECE431T	Mobile Computing	3	0	0	3
21ECE432T	Quantum Computing	3	0	0	3
21ECE433T	Deep Learning	3	0	0	3
21ECE434T	Web of Things	3	0	0	3
Total Learning Credits					18

6. Open Elective Courses (O) (Any 3 courses) offered by School of Electrical and Electronics Engineering					
Course Code	Course Title	Hours/ Week L	T	P	C
18ECO101T	Short-Range Wireless Communication	3	0	0	3
18ECO102J	Electronic Circuits & Systems	2	0	2	3
18ECO103T	Modern Wireless Communication Systems	3	0	0	3
18ECO104J	PCB Design and Manufacturing	2	0	2	3
18ECO105T	Fiber Optics and Optoelectronics	3	0	0	3
18ECO106J	Embedded System Design using Arduino	2	0	2	3
18ECO107J	Embedded System Design using Raspberry Pi	2	0	2	3
18ECO108J	3D Printing Hardware and Software	2	0	2	3
Total Learning Credits					9

7. Project Work, Seminar, Internship In Industry / Higher Technical Institutions (P)					
Course Code	Course Title	Hours/ Week L	T	P	C
21ECP350L	Community Connect (To be completed in 4th sem vacation)	0	0	2	1
21ECP351L	Project (Compulsory for exit option at 6th sem)	0	0	6	3
21ECP352L	MOOC	3	0	0	
21ECP451L	Major Project	0	0	30	15
21ECP452L	Semester Internship				
Total Learning Credits					19

8. Mandatory Courses (M)					
Code	Course Title	L	T	P	C
21PDM101L	Professional Skills and Practices	0	0	2	0
21CYM101T	Environmental Science	1	0	0	0
21PDM102L	General Aptitude	0	0	2	0
21LEM201T	Professional Ethics*	1	0	0	0
21PDM201L	Verbal Reasoning*	0	0	2	0
21PDM202L	Critical and Creative Thinking Skills*	0	0	2	0
21PDM301L	Analytical and Logical Thinking Skills*	0	0	2	0
21PDM302L	Employability Skills and Practices*	0	0	2	0

(f) Implementation Plan: B.Tech. in Electronics and Computer Engineering

Semester - I

Code	Course Title	Hours/ Week L	T	P	C
21LEH102T/ 21LEH103T/ 21LEH104T/ 21LEH105T/ 21LEH106T/ 21LEH107T/ 21LEH101T	Chinese Language/ French Language / German Language / Japanese Language / Korean Language / Spanish Language / Communicative English	2	1	0	3
21GNH101J	Philosophy of Engineering	1	0	2	2
21MAB101T	Calculus and Linear Algebra	3	1	0	4
21CYB101J/ 21PYB101J	Chemistry / Physics: Electromagnetic Theory, Quantum Mechanics, Waves and Optics	3	1	2	5
21BTB103T	Biology	2	0	0	2
21MES101L/ 21MES102L	Basic Civil and Mechanical Workshop / Engineering Graphics and Design	1	0	4	3
21CSS101J/ 21EES101T	Programming for Problem Solving / Electrical and Electronics Engineering	3	0	4	5
21PDM101L	Professional Skills and Practices	0	0	2	0
	Total Learning Credits				24

Semester - II

Code	Course Title	Hours/ Week L	T	P	C
21LEH101T/ 21LEH102T/ 21LEH103T/ 21LEH104T/ 21LEH105T/ 21LEH106T/ 21LEH107T	Communicative English/ Chinese Language/ French Language / German Language / Japanese Language / Korean Language / Spanish Language	2	1	0	3
21MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4
21PYB101J/ 21CYB101J	Physics: Electromagnetic Theory, Quantum Mechanics, Waves and Optics/ Chemistry	3	1	2	5
21MES102L/ 21MES101L	Engineering Graphics and Design / Basic Civil and Mechanical Workshop	1	0	4	3
21EES101T/ 21CSS101J	Electrical and Electronics Engineering/ Programming for Problem Solving	3	1	0	4
21ECC112J	Systems Programming	2	0	2	3
21CYM101T	Environmental Science*	1	0	0	0
21PDM102L	General Aptitude*	0	0	2	0
	Total Learning Credits				22

Semester – III

Code	Course Title	Hours/ Week L	T	P	C
21MAB201T	Transforms and Boundary Value Problems	3	1	0	4
21DCS201P	Design Thinking and Methodology	1	2	0	3
21CSS201T	Computer Organization and Architecture	3	0	0	3
21ECC213J	Analog Devices and Circuits	3	0	2	4
21ECC203J	Digital logic Design	2	0	2	3
21ECC215J	Object Oriented Design and Programming	2	0	2	3
21LEM201T	Professional Ethics	1	0	0	0
21PDM201L	Verbal Reasoning	0	0	2	0
	Total Learning Credits				20

Semester – IV

Code	Course Title	Hours/ Week L	T	P	C
21MAB203T	Probability and Stochastic Process	3	1	0	4
21ECC212T	Data Structures and Algorithms	3	0	0	3
21ECC204T	Signal Processing	3	0	0	3
21ECC233L	Data Structures Lab	0	0	4	2
21CSC206T	Artificial Intelligence	2	1	0	3
E	Professional Elective-I				3
21PDH201T	Social Engineering	2	0	0	2
21PDM202L	Critical and Creative Thinking Skills	0	0	2	0
	Total Learning Credits				20

Semester – V

Code	Course Title	Hours/ Week L	T	P	C
21MAB302T	Discrete Mathematics	3	1	0	4
21ECC313P	Embedded Microcontrollers	3	2	0	4
21ECC315T	Database Management Systems	3	0	0	3
21ECC317T	Data Communication and PLC	3	0	0	3
E	Professional Elective – II				3
O	Open Elective – I	3	0	0	3
21ECP350L	Community Connect (To be completed in 4th sem vacation)	0	0	2	1
21PDM301L	Analytical and Logical Thinking Skills	0	0	2	0
	Total Learning Credits				21

Semester – VI

Code	Course Title	Hours/ Week L	T	P	C
21CSS303T	Data Science	2	0	0	2
21ECC312T	Hardware Interfacing and Networking	3	0	0	3
21ECC314J	Embedded Hardware and Operating systems	2	0	2	3
E	Professional Elective – III	3	0	0	3
E	Professional Elective – IV	3	0	0	3
O	Open Elective – II	3	0	0	3
21ECP351L	Project (compulsory for exit option at 6th semester)	0	0	6	3
21ECP352L	MOOC	3	0	0	
21PDM302L	Employability Skills and Practices	0	0	2	0
	Total Learning Credits				20

Semester - VII

Code	Course Title	Hours/ Week L	T	P	C
21GNH401T	Behavioral Psychology	2	1	0	3
21ECC412J	Programming with Python	2	0	2	3
21ECC413T	FPGA based Embedded Systems	3	0	0	3
E	Professional Elective – V	3	0	0	3
E	Professional Elective – VI	3	0	0	3
O	Open Elective –III	3	0	0	3
	Total Learning Credits				18

Semester - VIII

Code	Course Title	Hours/ Week L	T	P	C
21ECP451L	Major Project	0	0	30	15
21ECP452L	Semester Internship				
	Total Learning Credits				15