ACADEMIC CURRICULA

UNDERGRADUATE DEGREE PROGRAMME

Bachelor of Technology
In
Electronics and Communication 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

B.Tech. in Electronics and Communication 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	*Create technologically innovative products that are economically viable 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 Stmt. - 1	Mission Stmt. - 2	Mission Stmt. - 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	-	-
PEO - 2	-	-	3	3	3	3	-	-	2	-	3	-	-	3	-
PEO - 3	-	-	-	3	3	-	2	2	-	2	-	3	-	2	3
PEO - 4	-	-	-	-	-	-	-	3	3	3	3	-	-	-	3

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	***Problem-Solving Skills:*** *Should be able to associate the learning from the courses related to Microelectronics, Signal processing, Microcomputers, Embedded and Communication Systems to arrive at solutions to real world problems.*
PSO - 2	***Professional Skills:*** *Should have the capability to develop competence in using electronic modern design tools (both software and hardware) for the design and analysis of complex electronic systems in furtherance to research activities.*
PSO - 3	***Successful Career and Entrepreneurship:*** *Should be able to understand the need for new skills to accommodate the rapidly changing industry research pattern in this field to have a successful career and to sustain passion and zeal for real-world applications using optimal resources as an Entrepreneur.*

(e) Program Structure: B.Tech. in Electronics and Communication 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
21ECC101J	Electronic System and PCB Design	2	0	2	3
21ECC20J	Solid State Devices	2	0	2	3
21ECC202T	Analog and Linear Electronic Circuits	3	0	0	3
21ECC203J	Digital logic Design	2	0	2	3
21ECC204T	Signal Processing	3	0	0	3
21ECC205T	Electromagnetic Theory and Interference	3	0	0	3
21ECC211L	Devices and Digital IC Lab	0	0	4	2
21ECC222L	Analog and Linear Electronic Circuits Lab	0	0	4	2
21ECC301P	Microprocessor, Microcontroller and Interfacing Techniques	3	2	0	4
21ECC302T	Analog and Digital Communication	2	0	0	2
21ECC303T	VLSI Design and Technology	3	0	0	3
21ECC304T	Microwave and Optical Communication	2	0	0	2
21ECC311L	VLSI Design Lab	0	0	4	2
21ECC322L	Communication Lab	0	0	4	2
21ECC401T	Wireless Communication and Antenna Systems	3	0	0	3
21ECC402P	Computer Communication and Network Security	2	1	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: Electronic System Engineering					
21ECE201J	Python and Scientific Python	2	0	2	3
21ECE202T	Micro- and Nano-Fabrication Technologies	3	0	0	3
21ECE203J	Smart Sensors and Devices for Agriculture	2	0	2	3
21ECE204T	Optoelectronics	3	0	0	3
21ECE205T	Flexible Electronics	3	0	0	3
21ECE301T	Nanoscale Electronic Devices	3	0	0	3
21ECE302J	Real Time Operating Systems	2	0	2	3
21ECE303T	MEMS Technologies	3	0	0	3
21ECE304T	Cyber Physical System Framework	3	0	0	3
21ECE305J	Machine Learning Algorithms	2	0	2	3
21ECE401T	Advanced Digital System Design	3	0	0	3
21ECE402T	Semiconductor Device Modeling	3	0	0	3
21ECE403T	Microwave Integrated Circuits	3	0	0	3
21ECE404T	Terahertz Devices and Applications	3	0	0	3
Sub-Stream: Communication System Engineering					
21ECE220T	Wireless and Optical Sensors	3	0	0	3
21ECE221T	Radar And Navigational Aids	3	0	0	3
21ECE222T	Adhoc and Sensor Networks	3	0	0	3
21ECE223T	Satellite Communication and Broadcasting	3	0	0	3
21ECE224T	Cryptography and Network Security	3	0	0	3
21ECE225T	Optical Systems and Networks	3	0	0	3
21ECE320T	Software Defined Networks	3	0	0	3
21ECE321T	RF and Microwave Semiconductor Devices	3	0	0	3
21ECE322T	Data analytics using R	3	0	0	3
21ECE323T	Cyber Security	3	0	0	3
21ECE324T	Advanced Mobile Communication Systems	3	0	0	3
21ECE420T	Information Theory and Coding	3	0	0	3
21ECE421T	Wireless Communication Networks	3	0	0	3
Sub-Stream: Signal Processing					
21ECE240T	Wavelets and Signal Processing	3	0	0	3
21ECE241J	Audio and Speech Processing	2	0	2	3
21ECE242J	Pattern Recognition and Neural Networks	2	0	2	3
21ECE340J	Digital Image and Video Processing	2	0	2	3
21ECE341J	DSP System Design	2	0	2	3
21ECE440T	Adaptive Signal Processing	3	0	0	3
21ECE441T	Machine Perception with Cognition	3	0	0	3
21ECE442T	Multimedia Compression Techniques	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

8. Mandatory Courses (M)					
Code	Course Title	L	T	P	C
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 Communication 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
21ECC101J	Electronic System and PCB Design	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
21ECC201J	Solid State Devices	2	0	2	3
21ECC203J	Digital logic Design	2	0	2	3
21ECC205T	Electromagnetic Theory and Interference	3	0	0	3
21ECC211L	Devices and Digital IC Lab	0	0	4	2
21LEM201T	Professional Ethics	1	0	0	0
21PDM201L	Verbal Reasoning	0	0	2	0
Total Learning Credits					21

Semester – IV

Code	Course Title	Hours/ Week L	T	P	C
21MAB203T	Probability and Stochastic Process	3	1	0	4
21ECC202T	Analog and Linear Electronic Circuits	3	0	0	3
21ECC204T	Signal Processing	3	0	0	3
21ECC222L	Analog and Linear Electronic Circuits 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
21ECC301P	Microprocessor, Microcontroller and Interfacing Techniques	3	2	0	4
21ECC303T	VLSI Design and Technology	3	0	0	3
21ECC311L	VLSI Design Lab	0	0	4	2
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					20

Semester – VI

Code	Course Title	Hours/ Week L	T	P	C
21CSS303T	Data Science	2	0	0	2
21ECC302T	Analog and Digital Communication	2	0	0	2
21ECC304T	Microwave and Optical Communication	2	0	0	2
21ECC322L	Communication Lab	0	0	4	2
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
21ECC401T	Wireless Communication and Antenna Systems	3	0	0	3
21ECC402P	Computer Communication and Network Security	2	1	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