ACADEMIC CURRICULA

UNDERGRADUATE DEGREE PROGRAMMES

Bachelor of Technology

(B.Tech. - Four Years)

(Choice Based Flexible Credit System)

Regulations 2018

Volume - 1

(Revised in March 2019)

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Kattankulathur, Kancheepuram District 603203, Tamil Nadu, India

26. B.Tech. in Electronics and Computer Engineering

26. (a) Mission of the Department

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

26. (b) Program Educational Objectives (PEO)

PEO - 1	*Expertise using their mathematical and scientific knowledge to solve emerging real-world problems, design and create novel products and solutions related to Electronics and Computer System Design, that are technically sound, economically feasible and socially acceptable*
PEO - 2	*Broad knowledge to establish themselves as creative practicing professionals, locally and globally, in technical / Managerial rolls ranging from design development problem Solving to Production in Software industries and R&D Sectors.*
PEO - 3	*Communication skills (in both written and oral forms) and critical reasoning skills in bridging the divide between advanced technology and end users in the practice of Electronics and Computer Engineering*
PEO - 4	*Sustained learning and adapting to a constantly changing field through graduate work, professional development, self-study and collaborative activities*
PEO - 5	*Leadership and initiative to ethically advance professional and organizational goals, facilitate the achievements of others, and obtain substantive results*
PEO - 6	*Ability to work productively as individuals and in groups (teamwork) of diverse cultural and multidisciplinary backgrounds.*

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

	Mission Stmt. - 1	Mission Stmt. - 2	Mission Stmt. - 3
PEO - 1	*L*	*M*	*H*
PEO - 2	*H*	*L*	*H*
PEO - 3	*L*	*L*	*M*
PEO - 4	*M*	*L*	*M*
PEO - 5	*L*	*H*	*H*
PEO - 6	*H*	*H*	*H*

H – High Correlation, M – Medium Correlation, L – Low Correlation

26. (d) Mapping Program Educational Objectives (PEO) to Program Learning Outcomes (PLO)

	Program Learning Outcomes (PLO)														
	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	Intelligent Computing Systems	Project Management Techniques	New Technologies in Information and Communication
PEO - 1	*H*		*H*	*H*	*H*	*M*	*M*	*H*	*L*		*H*		*H*	*L*	*H*
PEO - 2		*H*	*M*		*M*				*L*				*M*	*L*	
PEO - 3					*L*			*M*	*L*	*H*			*L*	*L*	
PEO - 4					*M*				*M*	*L*		*H*	*L*	*L*	
PEO - 5									*M*	*M*			*L*	*M*	
PEO - 6									*H*	*M*			*L*	*H*	

H – High Correlation, M – Medium Correlation, L – Low Correlation

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Specify, design, develop, test and manage reliable and efficient hardware and software products appropriate for an organization for intelligent computing systems.*
PSO - 2	*Apply project management techniques and appropriate methodologies to help an individual or organization achieve its goals, objectives and needs.*
PSO - 3	*Anticipate the changing direction of Information & Communication Technology, and evaluate and communicate the likely utility of new technologies to an individual or organization.*

26. (e) Program Structure: B.Tech. in Electronics and Computer Engineering

Humanities & Social Sciences including Management Courses (H)

Course Code	Course Title	Hours/ Week L	T	P	C
18LEH101J	English	2	0	2	3
18LEH102J	Chinese	2	0	2	3
18LEH103J	French				
18LEH104J	German				
18LEH105J	Japanese				
18LEH106J	Korean				
18PDH101T	General Aptitude	0	0	2	1
18PDH102T	Management Principles for Engineers	2	0	0	2
18PDH103T	Social Engineering	2	0	0	2
18PDH201T	Employability Skills & Practices	0	0	2	1
	Total Learning Credits				**12**

Basic Science Courses (B)

Course Code	Course Title	Hours/ Week L	T	P	C
18PYB101J	Physics: Electromagnetic Theory, Quantum Mechanics, Waves and Optics	3	1	2	5
18CYB101J	Chemistry	3	1	2	5
18MAB101T	Calculus and Linear Algebra	3	1	0	4
18MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4
18MAB201T	Transforms and Boundary Value Problems	3	1	0	4
18MAB203T	Probability and Stochastic Processes	3	1	0	4
18MAB302T	Discrete Mathematics for Engineers	3	1	0	4
18BTB101T	Biology	2	0	0	2
	Total Learning Credits				**32**

Open Elective Courses (O)
(Any 4 Courses)

Code	Course Title	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	Audio and Speech Signal Processing	2	0	2	3
18ECO105T	Underwater Acoustics	3	0	0	3
18ECO106J	PCB Design and Manufacturing	2	0	2	3
18ECO107T	Fiber Optics and Optoelectronics	3	0	0	3
18ECO108J	Embedded System Design using Arduino	2	0	2	3
18ECO109J	Embedded System Design Using Raspberry Pi	2	0	2	3
18ECO110J	3D Printing Hardware and Software	2	0	2	3
18ECO121T	Basic Biomedical Engineering	3	0	0	3
18ECO122T	Hospital Information Systems	3	0	0	3
18ECO123T	Biomedical Imaging	3	0	0	3
18ECO124T	Human Assist Devices	3	0	0	3
18ECO125T	Quality Control for Biomedical Devices	3	0	0	3
18ECO126T	Sports Biomechanics	3	0	0	3
18ECO131J	Virtual Instrumentation	2	0	2	3
18ECO132T	Analytical Instrumentation	3	0	0	3
18ECO133T	Sensors and Transducers	3	0	0	3
18ECO134T	Industrial Automation	3	0	0	3
18ECO135T	Fundamentals of MEMS	3	0	0	3
	Total Learning Credits				**12**

Mandatory Courses (M)

Code	Course Title	L	T	P	C
18PDM101L	Professional Skills and Practices	0	0	2	0
18PDM201L	Competencies in Social Skills	0	0	2	0
18PDM203L	Entrepreneurial Skill Development				
18PDM202L	Critical and Creative Thinking Skills	0	0	2	0
18PDM204L	Business Basics for Entrepreneurs				
18PDM301L	Analytical and Logical Thinking Skills	0	0	2	0
18PDM302L	Entrepreneurship Management				
18LEM101T	Constitution of India	1	0	0	0
18LEM102J	Value Education	1	0	1	0
18GNM101L	Physical and Mental Health using Yoga	0	0	2	0
18GNM102L	NSS	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
18LEM109T	Indian Traditional Knowledge	1	0	0	0
18LEM110L	Indian Art Form	0	0	2	0
18CYM101T	Environmental Science	1	0	0	0

Engineering Science Courses (S)

Course Code	Course Title	Hours/ Week L	T	P	C
18MES101L	Engineering Graphics and Design	1	0	4	3
18EES101J	Basic Electrical and Electronics Engineering	3	1	2	5
18MES103L	Civil and Mechanical Engineering Workshop	1	0	4	3
18CSS101J	Programming for Problem Solving	3	0	4	5
18ECS301J	Applied Programing	2	0	2	3
	Total Learning Credits				**19**

Professional Core Courses (C)

Course Code	Course Title	Hours/ Week L	T	P	C
18ECC211J	Solid State Semiconductor Devices	3	0	2	4
18ECC212J	Fundamentals of Computer System Design	3	0	2	4
18ECC104T	Signals and Systems	3	1	0	4
18ECC201J	Analog Electronic Circuits	3	0	2	4
18CSC201J	Data Structures and Algorithms	3	0	2	4
18ECC202J	Linear Integrated Circuits	3	0	2	4
18CSC202J	Object Oriented Design and Programming	3	0	2	4
18CSC203J	Computer Organization and Architectures	3	0	2	4
18ECC311J	Microcontrollers and Interfacing	3	0	2	4
18CSC303J	Database Management Systems	3	0	2	4
18ECC312T	Hardware Interfacing and Networking	3	0	0	3
18ECC313J	Embedded Hardware and Operating systems	3	0	2	4
18ECC411J	FPGA Based Embedded Systems	3	0	2	4
18ECC351T	Comprehension	0	1	0	1
	Total Learning Credits				**52**

Project Work, Seminar, Internship In Industry / Higher Technical Institutions (P)

Course Code	Course Title	Hours/ Week L	T	P	C
18ECP101L	Massive Open Online Course - I	0	0	2	1
18ECP102L	Industrial Training-I				
18ECP103L	Seminar - I				
18ECP104L	Massive Open Online Course - II	0	0	2	1
18ECP105L	Industrial Training-II				
18ECP106L	Seminar - II				
18ECP107L	Minor Project	0	0	6	3
18ECP108L	Internship				
18ECP109L	Project	0	0	20	10
18ECP110L	Semester Internship				
	Total Learning Credits				**15**

Professional Elective Courses (E)
(Any 6 Elective Courses)

Course Code	Course Title	Hours/ Week L	T	P	C
	Sub-Stream: Electronics Engineering				
18ECE211T	Electromagnetics and Antenna Theory	3	0	0	3
18ECE212T	Control Systems: Theory and Applications	3	0	0	3
18ECE311J	Applied Digital Signal Processing	2	0	2	3
18ECE312T	Wireless and Optical Sensors	3	0	0	3
18ECE313T	Digital Communication Systems	3	0	0	3
18ECE314T	Wireless Communication Networks	3	0	0	3
18ECE315T	ASIC Design	3	0	0	3
18ECE316T	Embedded Linux	3	0	0	3
18ECE206J	Advanced Digital System Design	2	0	2	3
18ECE224T	Cryptography and Network Security	3	0	0	3
18ECE243J	Digital Image and Video Processing	2	0	2	3
18ECE322T	Optoelectronics	3	0	0	3
	Sub-Stream: Computer Engineering				
18CSE392T	Machine Learning - 1	3	0	0	3
18CSE378T	Principles of Cloud Computing	3	0	0	3
18CSE390T	Computer Vision	3	0	0	3
18CSE355T	Data Mining and Analytics	3	0	0	3
18CSE484T	Deep Learning	3	0	0	3
18ECE231J	IoT System Design	2	0	2	3
18ECE331J	Multi-Core Architecture and Programming	2	0	2	3
18ECE332T	Principles of Artificial Intelligence	3	0	0	3
18ECE333T	Principles of Cyber-Physical Systems	3	0	0	3
18ECE334T	Hardware Software Co-Design	3	0	0	3
18ECE335T	Introduction to Virtual Computing	3	0	0	3
18ECE336T	Mobile Computing	3	0	0	3
18ECE337T	Web of Things	3	0	0	3
18ECE338T	Quantum Computing	3	0	0	3
18ECE339T	Data Analysis and Visualization	3	0	0	3
	Total Learning Credits				**18**

26. (f) Program Articulation: B.Tech. in Electronics and Computer Engineering

Course Code	Course Name	Program Learning Outcomes (PLO)														
		Graduate Attributes												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	PSO - 2	PSO - 3
18ECS301J	Applied Programing	M		H	M									H		M
18ECC211J	Solid State Semiconductor Devices	M	M	H					M	H				L	L	M
18ECC212J	Fundamentals of Computer System Design	H	M	H					M	H				H	L	
18ECC104T	Signals and Systems	H	H	M												H
18ECC201J	Analog Electronic Circuits	H		M	H									M		M
18CSC201J	Data Structures and Algorithms	M	L	H	H									H	L	
18ECC202J	Linear Integrated Circuits	M	L	H	H									H	L	
18CSC202J	Object Oriented Design and Programming	M	M	H		H							L	H	L	
18CSC203J	Computer Organization and Architectures	M	L	H	H	H	M	L							L	H
18ECC311J	Microcontrollers and Interfacing	H	L	H	H	H			H	M			M	H	L	
18CSC303J	Database Management Systems	M				M										
18ECC312T	Hardware Interfacing and Networking	M					L	H	M					L		M
18ECC313J	Embedded Hardware and Operating systems	H	L	H		M			L	L				L	L	
18ECC411J	FPGA based Embedded Systems	H		M			H	H	L	L			M	L	L	
18ECP101L	Massive Open Online Course - I						M	L			H		H		M	
18ECC351T	Comprehension	M	H	H	L	L	L	L	L	L	L	L	L	M	L	M
18ECP101L	MOOC / Industrial Training / Seminar – 1	M					M	L			H		H		M	
18ECP102L	MOOC / Industrial Training / Seminar – 2	M					M	L			H		H		M	
18ECP103L	Project (Phase-I) / Internship (3-4 weeks)	M	M	H	H	M	H	H	L	H	H	H	H	H	H	M
18ECP103L	Project (Phase-II) / Semester Internship	M	M	H	H	M	H	H	L	H	H	H	H	H	H	M
18ECE211T	Electromagnetics and Antenna Theory	H	H	H	M								M			
18ECE212T	Control Systems: Theory and Applications	H	H	H	H	H							H	H		
18ECE311J	Applied Digital Signal Processing	H	H	L	M	L					L		H	H		H
18ECE312T	Wireless and Optical Sensors	H	H											M	M	M
18ECE313T	Digital Communication Systems	H	H	H	H										M	
18ECE314T	Wireless Communication Networks	H	H	H	H										M	
18ECE315T	ASIC Design	M		H	M	H										
18ECE316T	Embedded Linux	L	H	H												H
18ECE231J	IoT System Design	M	M	H		M									M	M
18ECE331J	Multi-Core Architecture and Programming	H		M	M									M		H
18ECE332T	Principles of Artificial Intelligence	H	H	H										M	L	M
18ECE333T	Principles of Cyber-Physical Systems	H		H					H	H	H			H		H
18ECE334T	Hardware/Software Co-Design	H	H	M	H	H								H		
18ECE335T	Introduction to Virtual Computing	H		H		H								H		H
18ECE336T	Mobile Computing	H		H										M	L	H
18ECE337T	Web of Things	H	H		H	H								H		H
18ECE338T	Quantum Computing	H	H		H									H	L	H
18ECE206J	Advanced Digital System Design	M	M	H		M									M	M
18ECE224T	Cryptography and Network Security	H		M	M									M		H
18ECE243J	Digital Image and Video Processing	H	H	H										M	L	M
18ECE322T	Opto Electronics	H		H					H	H	H			H		H
18CSE392T	Machine Learning - I	H	H	M	H	H								H		
18ECE339T	Data Analysis and Visualization	H		H		H								H		M
18CSE378T	Principles of Cloud Computing	M	M	H		M									M	M
18CSE390T	Computer Vision	M	M	H		M									M	M
18CSE355T	Data Mining and Analytics	H		M	M									M		H
18CSE484T	Deep Learning	H	H	H										M	L	M

H – High Correlation, M – Medium Correlation, L – Low Correlation, PSO – Program Specific Outcomes (PSO)

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

Semester - I

Code	Course Title	Hours/ Week L	T	P	C
18LEH10XJ	Chinese / French / German / Japanese/ Korean	2	0	2	3
18MAB101T	Calculus and Linear Algebra	3	1	0	4
18CYB101J	Chemistry	3	1	2	5
18CSS101J	Programming for Problem Solving	3	0	4	5
18MES103L	Civil and Mechanical Engineering Workshop	1	0	4	3
18PDM101L	Professional Skills and Practices	0	0	2	0
18LEM102J	Value Education	1	0	1	0
18GNM102L	NSS	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
Total Learning Credits					**20**

Semester - II

Code	Course Title	Hours/ Week L	T	P	C
18LEH101J	English	2	0	2	3
18MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4
18PYB101J	Physics: Electromagnetic Theory, Quantum Mechanics, Waves and Optics	3	1	2	5
18MES101L	Engineering Graphics and Design	1	0	4	3
18EES101J	Basic Electrical and Electronics Engineering	3	1	2	5
18PDH101T	General Aptitude	0	0	2	1
18LEM101T	Constitution of India	1	0	0	0
18GNM101L	Physical and Mental Health using Yoga	0	0	2	0
Total Learning Credits					**21**

Semester - III

Code	Course Title	Hours/ Week L	T	P	C
18MAB201T	Transforms and Boundary Value Problems	3	1	0	4
18ECC211J	Solid State Semiconductor Devices	3	0	2	4
18ECC212J	Fundamentals of Computer System Design	3	0	2	4
18ECC104T	Signals and Systems	3	1	0	4
18CSC202J	Object Oriented Design and Programming	3	0	2	4
18PDH103T	Social Engineering	2	0	0	2
18PDM201L	Competencies in Social Skills	0	0	2	0
18PDM203L	Entrepreneurial Skill Development				
18CYM101T	Environmental Science	1	0	0	0
Total Learning Credits					**22**

Semester - IV

Code	Course Title	Hours/ Week L	T	P	C
18MAB203T	Probability and Stochastic Processes	3	1	0	4
18BTB101T	Biology	2	0	0	2
18CSC201J	Data Structures and Algorithms	3	0	2	4
18ECC201J	Analog Electronic Circuits	3	0	2	4
	Professional Elective – 1	3	0	0	3
	Open Elective – 1	3	0	0	3
18PDH102T	Management Principles for Engineers	2	0	0	2
18PDM202L	Critical and Creative Thinking Skills	0	0	2	0
18PDM204L	Business Basics for Entrepreneurs				
Total Learning Credits					**22**

Semester - V

Code	Course Title	Hours/ Week L	T	P	C
18MAB302T	Discrete Mathematics for Engineers	3	1	0	4
18ECC202J	Linear Integrated Circuits	3	0	2	4
18ECC311J	Microcontrollers and Interfacing	3	0	2	4
18CSC203J	Computer Organization and Architecture	3	0	2	4
	Professional Elective – 2	3	0	0	3
	Open Elective – 2	3	0	0	3
18ECP101L	Massive Open Online Course - I	0	0	2	1
18ECP102L	Industrial Training-I				
18ECP103L	Seminar - I				
18PDM301L	Analytical and Logical Thinking Skills	0	0	2	0
18PDM302L	Entrepreneurship Management				
18LEM110L	Indian Art Form	0	0	2	0
Total Learning Credits					**23**

Semester - VI

Code	Course Title	Hours/ Week L	T	P	C
18ECS301J	Applied Programing	2	0	2	3
18ECC312T	Hardware Interfacing and Networking	3	0	0	3
18ECC313J	Embedded Hardware and Operating systems	3	0	2	4
18ECC351T	Comprehension	0	1	0	1
	Professional Elective – 3	3	0	0	3
	Professional Elective – 4	3	0	0	3
	Open Elective – 3	3	0	0	3
18ECP104L	Massive Open Online Course - II	0	0	2	1
18ECP105L	Industrial Training-II				
18ECP106L	Seminar - II				
18PDH201T	Employability Skills and Practices	0	0	2	1
18LEM109T	Indian Traditional Knowledge	1	0	0	0
Total Learning Credits					**22**

Semester - VII

Code	Course Title	Hours/ Week L	T	P	C
18CSC303J	Database Management Systems	3	0	2	4
18ECC411J	FPGA based Embedded Systems	3	0	2	4
	Professional Elective – 5	3	0	0	3
	Professional Elective – 6	3	0	0	3
	Open Elective – 4	3	0	0	3
18ECP107L	Minor Project	0	0	6	3
18ECP108L	Internship)				
Total Learning Credits					**20**

Semester - VIII

Code	Course Title	Hours/ Week L	T	P	C
18ECP109L	Project	0	0	20	10
18ECP110L	Semester Internship				
Total Learning Credits					**10**