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

16. B.Tech. in Computer Science and Engineering with Specialization in Cyber Security

16. (a) Mission of the Department

Mission Stmt - 1	To impart knowledge in cutting edge Computer Science and Engineering technologies in par with industrial standards.
Mission Stmt - 2	To collaborate with renowned academic institutions to uplift innovative research and development in Computer Science and Engineering and its allied fields to serve the needs of society
Mission Stmt - 3	To demonstrate strong communication skills and possess the ability to design computing systems individually as well as part of a multidisciplinary teams.
Mission Stmt - 4	To instill societal, safety, cultural, environmental, and ethical responsibilities in all professional activities
Mission Stmt - 5	To produce successful Computer Science and Engineering graduates with personal and professional responsibilities and commitment to lifelong learning

16. (b) Program Educational Objectives (PEO)

PEO - 1	Graduates will be able to perform in technical/managerial roles ranging from design, development, problem solving to production support in software industries and R&D sectors.
PEO - 2	Graduates will be able to successfully pursue higher education in reputed institutions.
PEO - 3	Graduates will have the ability to adapt, contribute and innovate new technologies and systems in the key domains of Computer Science and Engineering.
PEO - 4	Graduates will be ethically and socially responsible solution providers and entrepreneurs in Computer Science and other engineering disciplines.
PEO - 5	Graduates will possess the additional skills in securing the network and IT infrastructure in Cyberspace
PEO - 6	Graduates will have the key ability to strengthen the cyber ecosystem

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

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

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

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

	Program Learning Outcomes (PLO)												Program Specific Outcomes (PSO)		
	Graduate Attributes (GA)														
	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
PEO - 1	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
PEO - 2	H	H	H	H	H	L	L	H	L	H	L	H	H	H	H
PEO - 3	H	H	H	H	H	L	L	L	L	L	H	H	H	H	H
PEO - 4	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
PEO - 5	H	L	L	H	H	L	L	L	L	L	H	H	H	H	H
PEO - 6	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	Ability to Utilize Cyberspace security principles
PSO - 2	Ability to Collaborative plan and address any Incidence response
PSO - 3	Secure critical infrastructure

16. (e) Program Structure: B.Tech. in Computer Science and Engineering with Specialization in Cyber Security

1. Humanities & Social Sciences including Management Courses (H)

Course Code	Course Title	L	T	P	C
18LEH101J	English	2	0	2	3
18LEH102J	Chinese				
18LEH103J	French				
18LEH104J	German	2	0	2	3
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**

3. Engineering Science Courses (S)

Course Code	Course Title	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
18CSS201J	Analog and Digital Electronics	3	0	2	4
18CSS202J	Computer Communications	2	0	2	3
Total Learning Credits					**23**

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

Course Code	Course Title	L	T	P	C
18CSE381T	Cryptography	3	0	0	3
18CSE382T	Forensics And Incident Response	3	0	0	3
18CSE354T	Network Security	3	0	0	3
18CSE383T	Information Assurance and Security	3	0	0	3
18CSE384T	Secure Software Development Life Cycle	3	0	0	3
18CSE385T	Security Audit and Risk Assessment	3	0	0	3
18CSE386T	Penetration Testing and Vulnerability Assessment	3	0	0	3
18CSE357T	Biometrics	3	0	0	3
18CSE472T	Malware Analysis	3	0	0	3
18CSE442T	Cloud Security	3	0	0	3
18CSE474T	Cyber Law	3	0	0	3
18CSE475T	Mobile and Wireless Security	3	0	0	3
18CSE476T	Database Security	3	0	0	3
18CSE477T	Security Governance, Risk and compliance	3	0	0	3
18CSE478T	Operation System Security	3	0	0	3
Total Learning Credits					**18**

8. 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				
18GNM103L	NCC	0	0	2	0
18GNM104L	NSO				
18LEM109T	Indian Traditional Knowledge	1	0	0	0

2. Basic Science Courses (B)

Course Code	Course Title	L	T	P	C
18PYB103J	Physics: Semiconductor Physics	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
18MAB204T	Probability and Queueing Theory	3	1	0	4
18MAB302T	Discrete Mathematics for Engineers	3	1	0	4
18BTB101T	Biology	2	0	0	2
Total Learning Credits					**32**

4. Professional Core Courses (C)

Course Code	Course Title	L	T	P	C
18CSC201J	Data Structures and Algorithms	3	0	2	4
18CSC202J	Object Oriented Design and Programming	3	0	2	4
18CSC203J	Computer Organization and Architecture	3	0	2	4
18CSC204J	Design and Analysis of Algorithms	3	0	2	4
18CSC205J	Operating Systems	3	0	2	4
18CSC206J	Software Engineering and Project Management	3	0	2	4
18CSC207J	Advanced Programming Practice	3	0	2	4
18CSC301T	Formal Language and Automata	3	0	0	3
18CSC302J	Computer Networks	3	0	2	4
18CSC303J	Database Management Systems	3	0	2	4
18CSC304J	Compiler Design	3	0	2	4
18CSC305J	Artificial Intelligence	3	0	2	4
18CSC350T	Comprehension	0	1	0	1
18CSC208L	Competitive Professional Skills-I	0	0	2	1
18CSC306L	Competitive Professional Skills-II	0	0	2	1
18CSC307L	Competitive Professional Skills-III	0	0	2	1
Total Learning Credits					**51**

6. Open Elective Courses (O)

Course Code	Course Title	L	T	P	C
18CSO101T	IT Infrastructure Management	3	0	0	3
18CSO102T	Mobile Application Development	3	0	0	3
18CSO103T	System Modeling and Simulation	3	0	0	3
18CSO104T	Free and Open Source Softwares	3	0	0	3
18CSO105T	Android Development	3	0	0	3
18CSO106T	Data Analysis using Open Source Tool	3	0	0	3
18CSO107T	IOS Development	3	0	0	3
Total Learning Credits					**12**

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

Course Code	Course Title	L	T	P	C
18CSP101L	Massive Open Online Course - I	0	0	2	1
18CSP102L	Industrial Training-I				
18CSP103L	Seminar - I				
18CSP104L	Massive Open Online Course - II	0	0	2	1
18CSP105L	Industrial Training-II				
18CSP106L	Seminar - II				
18CSP107L	Minor Project	0	0	6	3
18CSP108L	Internship (4-6 weeks)				
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
Total Learning Credits					**15**

8. Mandatory Courses (M)

Course Code	Course Title	L	T	P	C
18LEM110L	Indian Art Form	0	0	2	0
18CYM101T	Environmental Science	1	0	0	0

16. (f) Program Articulation: B.Tech. in Computer Science and Engineering with Specialization in Cyber Security

Course Code	Course Name	Program Learning Outcomes (PLO)												PSO		
		Graduate Attributes														
		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
18CSS101J	Programming for Problem Solving	H	H	M	M	H	L	L	M	H	M	L	H	L	H	H
18CSC201J	Data Structures and Algorithms	H	H	H	H	M	L	L	M	H	M	M	M	L	H	H
18CSC202J	Object Oriented Design and Programming	H	H	H	H	H	M	L	M	H	H	M	H	L	H	H
18CSC203J	Computer Organization and Architecture	H	M	H	M	L	L	L	M	L	L	L	M	H	M	M
18CSC204J	Design and Analysis of Algorithms	H	H	H	H	M	M	L	M	M	M	M	H	L	H	H
18CSC205J	Operating Systems	H	H	H	H	H	M	L	M	H	M	M	H	H	H	M
18CSC206J	Software Engineering and Project Management	H	H	H	H	H	H	H	H	H	H	H	H	L	H	M
18CSC207J	Advanced Programming Practice	H	H	M	M	H	L	L	M	H	M	L	H	L	H	H
18CSC301T	Formal Language and Automata	H	H	H	H	L	L	L	L	M	M	L	H	H	H	H
18CSC302J	Computer Networks	H	H	H	H	H	M	L	M	H	M	M	H	H	H	M
18CSC303J	Database Management Systems	H	H	H	H	H	M	L	M	H	M	M	H	H	H	M
18CSC304J	Compiler Design	H	H	H	H	M	L	L	L	M	M	L	H	H	H	H
18CSC305J	Artificial Intelligence	H	H	H	H	M	M	L	L	M	M	L	H	H	H	H
18CSC208L	Competitive Professional Skills-I	H	H	H	H	H	L	L	M	H	H	M	H	H	H	H
18CSC306L	Competitive Professional Skills-II	H	H	H	H	H	L	L	M	H	H	M	H	H	H	H
18CSC307L	Competitive Professional Skills-III	H	H	H	H	H	L	L	M	H	H	M	H	H	H	H
18CSE381T	Cryptography	M	H	L	M	M	L	L	M	H	H	L	M	H	H	H
18CSE382T	Forensics And Incident Response	M	H	M	H	M	M	L	H	H	H	L	H	H	H	H
18CSE354T	Network Security	H	H	H	H	H	L	L	M	H	H	L	H	H	H	H
18CSE383T	Information Assurance and Security	H	H	H	H	M	M	M	M	H	H	M	M	H	H	H
18CSE384T	Secure Software Development Life Cycle	H	H	H	H	H	L	L	L	H	M	H	H	H	H	H
18CSE385T	Security Audit and Risk Assessment	M	H	M	H	M	L	L	M	H	H	H	H	H	H	H
18CSE386T	Penetration Testing and Vulnerability Assessment	L	M	M	H	H	L	L	H	H	M	M	H	H	H	H
18CSE357T	Biometrics	M	H	H	H	M	H	H	M	H	M	H	H	H	H	H
18CSE472T	Malware Analysis	M	H	H	H	H	L	L	M	H	H	L	H	H	H	H
18CSE442T	Cloud Security	H	H	H	H	H	L	L	L	H	M	L	L	H	H	H
18CSE474T	Cyber Law	L	H	H	H	L	H	L	H	H	H	L	H	H	H	H
18CSE475T	Mobile and Wireless Security	H	H	H	H	H	M	L	M	H	H	M	H	H	H	H
18CSE476T	Database Security	M	H	H	H	H	L	L	M	H	H	H	H	H	H	H
18CSE477T	Security Governance, Risk and compliance	M	H	H	H	H	M	M	M	H	M	H	H	H	H	H
18CSE478T	Operation System Security	H	H	M	M	M	L	L	L	H	M	L	H	H	H	H
18CSP101L	Massive Open Online Course - I	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP102L	Industrial Training-I	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP103L	Seminar - I	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP104L	Massive Open Online Course - II	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP105L	Industrial Training-II	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP106L	Seminar - II	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP107L	Minor Project	H	H	H	H	H	M	H	H	H	H	H	H	H	M	M
18CSP108L	Internship (4-6 weeks)	H	H	H	H	H	M	M	H	H	H	H	H	H	M	M
18CSP109L	Project	H	H	H	H	H	M	H	H	H	H	H	H	H	M	M
18CSP110L	Semester Internship	H	H	H	H	H	M	H	H	H	H	H	H	H	M	M
	Program Average	H	H	M	H	M	L	M	L	M	M	M	H	M	M	M

16. (g) Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Cyber Security

Semester - I

Code	Course Title	L	T	P	C
18LEH101J	English	2	0	2	3
18MAB101T	Calculus and Linear Algebra	3	1	0	4
18PYB103J	Physics: Semiconductor Physics	3	1	2	5
18MES101L	Engineering Graphics and Design	1	0	4	3
18EES101J	Basic Electrical and Electronics Engineering	3	1	2	5
18PDM101L	Professional Skills and Practices	0	0	2	0
18LEM101T	Constitution of India	1	0	0	0
18GNM101L	Physical and Mental Health using Yoga	0	0	2	0
Total Learning Credits					**20**

Semester - II

Code	Course Title	L	T	P	C
18LEH10XJ	Chinese / French / German / Japanese/ Korean	2	0	2	3
18MAB102T	Advanced Calculus and Complex Analysis	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
18PDH101T	General Aptitude	0	0	2	1
18LEM102J	Value Education	1	0	1	0
18GNM102L	NSS				
18GNM103L	NCC	0	0	2	0
18GNM104L	NSO				
Total Learning Credits					**21**

Semester - III

Code	Course Title	L	T	P	C
18MAB201T	Transforms and Boundary Value Problems	3	1	0	4
18BTB101T	Biology	2	0	0	2
18CSS201J	Analog and Digital Electronics	3	0	2	4
18CSC201J	Data Structures and Algorithms	3	0	2	4
18CSC202J	Object Oriented Design and Programming	3	0	2	4
18CSC203J	Computer Organization and Architecture	3	0	2	4
18PDH102T	Management Principles for Engineers	2	0	0	2
18PDM201L	Competencies in Social Skills	0	0	2	0
18PDM203L	Entrepreneurial Skill Development				
Total Learning Credits					**24**

Semester - IV

Code	Course Title	L	T	P	C
18MAB204T	Probability and Queueing Theory	3	1	0	4
18CSS202J	Computer Communications	2	0	2	3
18CSC204J	Design and Analysis of Algorithms	3	0	2	4
18CSC205J	Operating Systems	3	0	2	4
18CSC206J	Software Engineering and Project Management	3	0	2	4
18CSC207J	Advanced Programming Practice	3	0	2	4
18CSC208L	Competitive Professional Skills-I	0	0	2	1
18PDH103T	Social Engineering	2	0	0	2
18PDM202L	Critical and Creative Thinking Skills	0	0	2	0
18PDM204L	Business Basics for Entrepreneurs				
18CYM101T	Environmental Science	1	0	0	0
Total Learning Credits					**26**

Semester - V

Code	Course Title	L	T	P	C
18MAB302T	Discrete Mathematics for Engineers	3	1	0	4
18CSC301T	Formal Language and Automata	3	0	0	3
18CSC302J	Computer Networks	3	0	2	4
18CSC306L	Competitive Professional Skills-II	0	0	2	1
	Professional Elective – 1	3	0	0	3
	Professional Elective – 2	3	0	0	3
	Open Elective – 1	3	0	0	3
18CSP101L	Massive Open Online Course - I				
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I				
18PDM301L	Analytical and Logical Thinking Skills	0	0	2	0
18PDM302L	Entrepreneurship Management				
18LEM109T	Indian Traditional Knowledge	1	0	0	0
Total Learning Credits					**22**

Semester - VI

Code	Course Title	L	T	P	C
18CSC303J	Database Management Systems	3	0	2	4
18CSC304J	Compiler Design	3	0	2	4
18CSC305J	Artificial Intelligence	3	0	2	4
18CSC350T	Comprehension	0	1	0	1
18CSC307L	Competitive Professional Skills-III	0	0	2	1
	Professional Elective – 3	3	0	0	3
	Professional Elective – 4	3	0	0	3
	Open Elective – 2	3	0	0	3
18CSP104L	Massive Open Online Course - II				
18CSP105L	Industrial Training-II	0	0	2	1
18CSP106L	Seminar - II				
18PDH201T	Employability Skills and Practices	0	0	2	1
18LEM110L	Indian Art Form	0	0	2	0
Total Learning Credits					**25**

Semester - VII

Code	Course Title	L	T	P	C
	Professional Elective – 5	3	0	0	3
	Professional Elective – 6	3	0	0	3
	Open Elective – 3	3	0	0	3
18CSP107L	Minor Project	0	0	6	3
18CSP108L	Internship (4-6 weeks)				
Total Learning Credits					**12**

Semester - VIII

Code	Course Title	L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
Total Learning Credits					**10**