ACADEMIC CURRICULA

UNDERGRADUATE DEGREE PROGRAMMES

Bachelor of Technology

(B.Tech. - Four Years)

(Choice Based Flexible Credit System)

Regulations 2018

CURRICULUM
For
ALL UG PROGRAMMES UNDER
SCHOOL OF COMPUTING

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Kattankulathur, Chengalpattu District 603203, Tamil Nadu, India

Contents

11. B.Tech. in Computer Science and Engineering

11. (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*

11. (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 core computer science discipline with knowledge of Hardware, Software , Programming , Logic & Reasoning.*

11. (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*	*M*	*M*	*H*

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

11. (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	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*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to understand client requirements and suggest solutions*
PSO - 2	*Ability to create Software for automation and function*
PSO - 3	*Ability to utilize Logic & Reasoning Skills*

11. (e) Program Structure: B.Tech. in Computer Science and Engineering

1. 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

2. Basic Science Courses (B)					
Course Code	Course Title	Hours/ Week 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

3. 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
18CSS201J	Analog and Digital Electronics	3	0	2	4
18CSS202J	Computer Communications	2	0	2	3
Total Learning Credits					23

4. Professional Core Courses (C)					
Course Code	Course Title	Hours/ Week 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

5. Professional Elective Courses (E) (Any 6 Elective Courses)					
Course Code	Course Title	Hours/ Week L	T	P	C
18CSE351T	Computational Logic	3	0	0	3
18CSE352T	Neuro Fuzzy and Genetic Programming	3	0	0	3
18CSE353T	Digital Image Processing	3	0	0	3
18CSE354T	Network Security	3	0	0	3
18CSE355T	Data Mining and Analytics	3	0	0	3
18CSE356T	Distributed Operating Systems	3	0	0	3
18CSE357T	Biometrics	3	0	0	3
18CSE358T	Pattern Recognition Techniques	3	0	0	3
18CSE359T	Natural Language Processing	3	0	0	3
18CSE360T	Information Storage and Management	3	0	0	3
18CSE451T	Wireless Sensor Networks	3	0	0	3
18CSE452T	Network Protocols and Programming	3	0	0	3
18CSE453T	Network Routing Algorithms	3	0	0	3
18CSE454T	High Performance Computing	3	0	0	3
18CSE455T	Database Security and Privacy	3	0	0	3
18CSE456T	Software Defined Networks	3	0	0	3
18CSE457T	Semantic Web	3	0	0	3
18CSE458T	Wireless and Mobile Communication	3	0	0	3
18CSE459T	Service Oriented Architecture	3	0	0	3
18CSE460T	Network Design and Management	3	0	0	3
Total Learning Credits					18

6. Open Elective Courses (O)					
Course Code	Course Title	Hours/ Week 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					9

7. Project Work, Seminar, Internship In Industry / Higher Technical Institutions (P)					
Course Code	Course Title	Hours/ Week 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)					
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
18LEM109T	Indian Traditional Knowledge	1	0	0	0
18LEM110L	Indian Art Form	0	0	2	0

8. Mandatory Courses (M)					
Course Code	Course Title	Hours/ Week L	T	P	C
18GNM102L	NSS	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
18CYM101T	Environmental Science	1	0	0	0

Program Articulation: B.Tech. in Computer Science and 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
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	H	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
18CSE351T	Computational Logic	M	H	M	H	M	M	L	M	M	M	M	H	L	H	H
18CSE352T	Neuro Fuzzy and Genetic Programming	M	H	H	H	H	M	L	M	M	M	M	H	L	H	H
18CSE353T	Digital Image Processing	H	H	H	M	H	M	L	M	H	M	M	H	L	H	H
18CSE354T	Network Security	H	H	H	H	H	L	L	M	H	H	L	H	H	H	H
18CSE355T	Data Mining and Analytics	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE356T	Distributed Operating Systems	H	H	H	H	H	M	L	M	H	M	M	H	H	H	M
18CSE357T	Biometrics	M	H	H	H	M	M	H	M	H	M	M	H	H	H	H
18CSE358T	Pattern Recognition Techniques	H	H	H	H	H	M	M	M	M	M	M	H	L	H	H
18CSE359T	Natural Language Processing	H	H	H	H	H	H	L	M	H	M	M	H	M	H	H
18CSE360T	Information Storage and Management	H	H	H	H	M	H	H	M	H	M	H	H	H	M	H
18CSE451T	Wireless Sensor Networks	H	H	H	H	M	M	M	M	M	H	L	H	H	H	H
18CSE452T	Network Protocols and Programming	H	H	H	H	M	M	M	M	M	H	L	H	H	H	H
18CSE453T	Network Routing Algorithms	H	H	H	H	M	M	M	M	M	H	L	H	H	H	H
18CSE454T	High Performance Computing	H	H	H	H	H	L	L	M	H	H	L	H	H	H	H
18CSE455T	Database Security and Privacy	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE456T	Software Defined Networks	H	H	H	H	H	M	M	M	M	H	M	H	H	H	H
18CSE457T	Semantic Web	M	H	H	H	H	M	L	M	M	H	M	H	M	H	H
18CSE458T	Wireless and Mobile Communication	H	H	H	H	M	H	H	H	M	H	M	H	H	H	H
18CSE459T	Service Oriented Architecture	M	H	H	H	H	M	M	M	M	H	M	H	H	H	H
18CSE460T	Network Design and Management	H	H	H	H	M	M	M	M	M	H	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	M	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	M	H	H	H	H	H	H	M	M
18CSP110L	Semester Internship	H	H	H	H	H	M	M	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

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

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

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
	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
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	Hours/ Week 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	Hours/ Week 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	0	0	2	1
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills				
18PDM302L	Entrepreneurship Management	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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
18CSC207L	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	0	0	2	1
18CSP105L	Industrial Training-II				
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	Hours/ Week 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	Hours/ Week L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
	Total Learning Credits				10

12. B.Tech. in Computer Science and Engineering with Specialization in Artificial Intelligence and Machine Learning

12. (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*

12. (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 be able to explore recent technological developments related to Systems Engineering.*
PEO - 6	*Graduates will have the ability to explore research areas and produce outstanding contribution in various areas of Systems Engineering.*

12. (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*	*M*	*M*	*H*
PEO - 6	*M*	*H*	*H*	*H*	*H*

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

12. (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	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*	*H*	*H*	*H*	*H*	*H*	*H*	*L*	*L*	*L*	*L*	*L*	*H*	*H*	*L*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to Utilize Artificial intelligence and Machine Learning Principles*
PSO - 2	*Create Machine Intelligence Algorithms*
PSO - 3	*Ability to Develop systems*

12. (e) Program Structure: B.Tech. in Computer Science and Engineering with Specialization in Artificial Intelligence and Machine Learning

1. 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**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSE387T	Genetic algorithm and its Applications	3	0	0	3
18CSE388T	Artificial Neural networks	3	0	0	3
18CSE389T	Fuzzy Logic and its Applications	3	0	0	3
18CSE390T	Computer Vision	3	0	0	3
18CSE353T	Digital Image Processing	3	0	0	3
18CSE359T	Natural Language Processing	3	0	0	3
18CSE358T	Pattern Recognition Techniques	3	0	0	3
18CSE479T	Statistical Machine Learning	3	0	0	3
18CSE480T	Nature Inspired Computing Techniques	3	0	0	3
18CSE481T	Applied Machine Learning	3	0	0	3
18CSE482T	Computational Neuroscience	3	0	0	3
18CSE483T	Intelligent Machining	3	0	0	3
18CSE484T	Deep Learning	3	0	0	3
18CSE485T	Robotics: Computational Motion Planning	3	0	0	3
18CSE486T	Advanced Algorithms	3	0	0	3
	Total Learning Credits				**18**

6. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week 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				**9**

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

Course Code	Course Title	Hours/ Week 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)

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
18LEM109T	Indian Traditional Knowledge	1	0	0	0
18LEM110L	Indian Art Form	0	0	2	0
18CYM101T	Environmental Science	1	0	0	0

8. Mandatory Courses (M)

Course Code	Course Title	Hours/ Week L	T	P	C
18GNM102L	NSS	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				

12. (f)Program Articulation: B.Tech. in Computer Science and Engineering with Specialization in Artificial Intelligence and Machine Learning

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
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	H	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
18CSE387T	Genetic algorithm and its Applications	H	H	H	H	H	M	L	M	H	M	L	H	L	H	H
18CSE388T	Artificial Neural networks	H	H	H	M	H	M	L	M	H	M	L	H	L	H	H
18CSE389T	Fuzzy Logic and its Applications	H	H	H	H	H	M	L	M	H	M	L	H	L	H	H
18CSE390T	Computer Vision	H	H	H	H	M	M	L	M	H	M	M	H	L	H	H
18CSE353T	Digital Image Processing	H	H	H	M	H	M	L	M	H	M	M	H	L	H	H
18CSE359T	Natural Language Processing	H	H	H	H	H	H	L	M	H	M	M	H	M	H	H
18CSE358T	Pattern Recognition Techniques	H	H	H	M	H	M	L	M	H	M	L	H	L	H	H
18CSE479T	Statistical Machine Learning	H	H	H	H	M	M	L	M	H	M	L	H	M	H	H
18CSE480T	Nature Inspired Computing Techniques	H	H	H	H	H	M	M	H	H	M	M	H	M	H	H
18CSE481T	Applied Machine Learning	H	H	H	H	H	M	L	M	H	M	L	H	M	H	H
18CSE482T	Computational Neuroscience	H	H	H	H	H	M	L	M	H	M	M	H	M	H	H
18CSE483T	Intelligent Machining	H	H	H	H	H	M	L	M	H	H	M	H	M	H	H
18CSE484T	Deep Learning	H	H	H	H	H	M	L	M	H	M	L	H	L	H	H
18CSE485T	Robotics: Computational Motion Planning	H	H	H	H	H	M	M	M	H	H	M	H	M	H	H
18CSE486T	Advanced Algorithms	H	H	H	H	M	L	L	M	H	M	M	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	M	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	M	H	H	H	H	H	H	M	M
18CSP110L	Semester Internship	H	H	H	H	H	M	M	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

12. (g) Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Artificial Intelligence and Machine Learning

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
	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
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	Hours/ Week 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	Hours/ Week 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	0	0	2	1
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills				
18PDM302L	Entrepreneurship Management	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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	0	0	2	1
18CSP105L	Industrial Training-II				
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	Hours/ Week 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	Hours/ Week L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
	Total Learning Credits				10

13. B.Tech. in Computer Science and Engineering with Specialization in Big Data Analytics

13. (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*

13. (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 handling Big Data using the state-of-art tools and techniques*
PEO - 6	*Graduates will be able to apply the principles of data science for providing real world business solutions*

13. (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	*M*	*H*	*H*	*H*	*H*
PEO - 6	*M*	*H*	*H*	*H*	*H*

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

13. (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	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*	*H*	*L*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*
PEO - 6	*H*	*H*	*L*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to Utilize Data Science Principles*
PSO - 2	*Ability to Analyze Data, Software & Programming*
PSO - 3	*Analysis and Interpretation of data*

13. (e) Program Structure: B.Tech. in Computer Science and Engineering with Specialization in Big Data Analytics

1. 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**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSE391T	Big Data Tools and Techniques	3	0	0	3
18CSE355T	Data Mining and Analytics	3	0	0	3
18CSE392T	Machine Learning - I	3	0	0	3
18CSE360T	Information Storage and Management	3	0	0	3
18CSE393T	Text Mining	3	0	0	3
18CSE394T	Business Intelligence and Analytics	3	0	0	3
18CSE395T	Web Intelligence	3	0	0	3
18CSE396T	Data Science	3	0	0	3
18CSE455T	Database Security and Privacy	3	0	0	3
18CSE487T	Data Warehousing and its Applications	3	0	0	3
18CSE488T	Functional Programming	3	0	0	3
18CSE489T	Streaming Analytics	3	0	0	3
18CSE490T	Big Data Visualization	3	0	0	3
18CSE484T	Deep Learning	3	0	0	3
18CSE491T	Machine Learning – II	3	0	0	3
Total Learning Credits					**18**

6. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week 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					**9**

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

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

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

Program Articulation: B.Tech. in Computer Science and Engineering with Specialization in Big Data Analytics

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
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	H	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
18CSE391T	Big Data Tools and Techniques	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE355T	Data Mining and Analytics	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE392T	Machine Learning - I	H	H	H	H	H	H	H	M	H	H	M	H	H	H	H
18CSE360T	Information Storage and Management	H	H	H	H	M	H	H	M	H	M	H	H	H	M	H
18CSE393T	Text Mining	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE394T	Business Intelligence and Analytics	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE395T	Web Intelligence	H	H	H	H	H	H	H	H	H	H	M	H	H	H	H
18CSE396T	Data Science	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE455T	Database Security and Privacy	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE487T	Data Warehousing and its Applications	H	H	M	H	H	H	H	M	H	M	H	H	H	M	H
18CSE488T	Functional Programming	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE489T	Streaming Analytics	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE490T	Big Data Visualization	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE484T	Deep Learning	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE491T	Machine Learning – II	H	H	H	H	H	H	H	H	H	H	H	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	M	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	M	H	H	H	H	H	H	M	M
18CSP110L	Semester Internship	H	H	H	H	H	M	M	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

13. (f)Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Big Data Analytics

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
	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
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	Hours/ Week 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	Hours/ Week 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	0	0	2	1
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills				
18PDM302L	Entrepreneurship Management	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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	0	0	2	1
18CSP105L	Industrial Training-II				
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	Hours/ Week 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	Hours/ Week L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
	Total Learning Credits				10

14. B.Tech. in Computer Science and Engineering with Specialization in Cloud Computing

14. (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*

14. (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 skills to design computing systems based on Cloud computing.*
PEO - 6	*Graduates will have the ability to develop tools incorporating the skills acquired in cloud computing domain.*

14. (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	*H*	*H*	*H*	*H*	*H*

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

14. (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	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*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*
PEO - 6	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to Utilize Hardware / Core Computer Science Principles*
PSO - 2	*Ability to Create Software & Programming*
PSO - 3	*Ability to Develop systems*

14. (e) Program Structure: B.Tech. in Computer Science and Engineering with Specialization in Cloud Computing

1. 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**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSE341T	Communication Systems Engineering	3	0	0	3
18CSE342T	Digital Communication Systems	3	0	0	3
18CSE378T	Principles of Cloud Computing	3	0	0	3
18CSE356T	Distributed Operating Systems	3	0	0	3
18CSE377T	Data Centric Networks	3	0	0	3
18CSE343T	Web Application Development	3	0	0	3
18CSE344T	Cloud Architecture	3	0	0	3
18CSE451T	Wireless Sensor Networks	3	0	0	3
18CSE454T	High Performance Computing	3	0	0	3
18CSE456T	Software Defined Networks	3	0	0	3
18CSE460T	Network Design and Management	3	0	0	3
18CSE441T	Cloud Application Development	3	0	0	3
18CSE442T	Cloud Security	3	0	0	3
18CSE443T	Big Data Essentials	3	0	0	3
18CSE444T	Cloud Strategy Planning and Management	3	0	0	3
	Total Learning Credits				**18**

6. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week 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				**9**

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

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

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

14. (f)Program Articulation: B.Tech. in Computer Science and Engineering with Specialization in Cloud Computing

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
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*	*H*	*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*
18CSE341T	*Communication Systems Engineering*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*
18CSE342T	*Digital Communication Systems*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*M*	*H*
18CSE378T	*Principles of Cloud Computing*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE356T	*Distributed Operating Systems*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*M*	*M*	*H*	*H*	*H*	*H*
18CSE377T	*Data Centric Networks*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE343T	*Web Application Development*	*M*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*	*H*	*L*	*H*	*H*
18CSE344T	*Cloud Architecture*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*
18CSE451T	*Wireless Sensor Networks*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*M*	*M*	*H*	*L*	*H*	*H*	*H*	*H*
18CSE454T	*High Performance Computing*	*H*	*H*	*H*	*H*	*H*	*L*	*L*	*M*	*H*	*H*	*L*	*H*	*H*	*H*	*H*
18CSE456T	*Software Defined Networks*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*M*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE460T	*Network Design and Management*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*M*	*M*	*H*	*L*	*H*	*H*	*H*	*H*
18CSE441T	*Cloud Application Development*	*M*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*
18CSE442T	*Cloud Security*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE443T	*Big Data Essentials*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*
18CSE444T	*Cloud Strategy Planning and Management*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*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*	*M*	*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*	*M*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*M*
18CSP110L	*Semester Internship*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*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*

14. (g) Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Cloud Computing

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
	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
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	Hours/ Week 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	Hours/ Week 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	0	0	2	1
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills				
18PDM302L	Entrepreneurship Management	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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	0	0	2	1
18CSP105L	Industrial Training-II				
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	Hours/ Week 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	Hours/ Week L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
	Total Learning Credits				10

15. B.Tech. in Computer Science and Engineering with Specialization in Computer Networking

15. (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*

15. (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 skills to design and maintain computer and communication systems*
PEO - 6	*Graduates will have the ability to develop tools incorporating the skills acquired in computer networking and its related domains.*

15. (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	*H*	*H*	*H*	*H*	*H*

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

15. (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	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*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*
PEO - 6	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to Utilize Hardware / Core Computer Science Principles*
PSO - 2	*Ability to Create Software & Programming*
PSO - 3	*Ability to Develop systems*

15. (e) Program Structure: B.Tech. in Computer Science and Engineering with Specialization in Computer Networking

1. 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	1	0	2	2
18PDH201T	Employability Skills & Practices	0	0	2	1
	Total Learning Credits				**12**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSE375T	Distributed Computing	3	0	0	3
18CSE356T	Distributed Operating Systems	3	0	0	3
18CSE376T	Optical Networks	3	0	0	3
18CSE377T	Data Centric Networks	3	0	0	3
18CSE378T	Principles of Cloud Computing	3	0	0	3
18CSE379T	Internet of Things	3	0	0	3
18CSE380T	Pervasive Computing	3	0	0	3
18CSE451T	Wireless Sensor Networks	3	0	0	3
18CSE452T	Network Protocols and Programming	3	0	0	3
18CSE453T	Network Routing Algorithms	3	0	0	3
18CSE454T	High Performance Computing	3	0	0	3
18CSE456T	Software Defined Networks	3	0	0	3
18CSE458T	Wireless and Mobile Communication	3	0	0	3
18CSE460T	Network Design and Management	3	0	0	3
18CSE459T	Service Oriented Architecture	3	0	0	3
	Total Learning Credits				**18**

6. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week 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				**9**

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

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

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

15. (f)Program Articulation: B.Tech. in Computer Science and Engineering with Specialization in Computer Networking

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
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*	*H*	*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*
18CSE375T	*Distributed Computing*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*H*	*M*	*M*	*H*	*H*	*H*	*H*
18CSE356T	*Distributed Operating Systems*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*M*	*M*	*H*	*H*	*H*	*H*
18CSE376T	*Optical Networks*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE377T	*Data Centric Networks*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE378T	*Principles of Cloud Computing*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE379T	*Internet of Things*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE380T	*Pervasive Computing*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE451T	*Wireless Sensor Networks*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*M*	*M*	*H*	*L*	*H*	*H*	*H*	*H*
18CSE452T	*Network Protocols and Programming*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*M*	*M*	*H*	*L*	*H*	*H*	*H*	*H*
18CSE453T	*Network Routing Algorithms*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*M*	*M*	*H*	*L*	*H*	*H*	*H*	*H*
18CSE454T	*High Performance Computing*	*H*	*H*	*H*	*H*	*H*	*L*	*L*	*M*	*H*	*H*	*L*	*H*	*H*	*H*	*H*
18CSE456T	*Software Defined Networks*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*M*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE458T	*Wireless and Mobile Communication*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*M*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE460T	*Network Design and Management*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*M*	*M*	*H*	*L*	*H*	*H*	*H*	*H*
18CSE459T	*Service Oriented Architecture*	*M*	*H*	*H*	*H*	*H*	*M*	*M*	*M*	*M*	*H*	*M*	*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*	*M*	*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*	*M*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*M*
18CSP110L	*Semester Internship*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*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*

15. (g) Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Computer Networking

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
	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
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	Hours/ Week 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	Hours/ Week 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	0	0	2	1
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills				
18PDM302L	Entrepreneurship Management	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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	0	0	2	1
18CSP105L	Industrial Training-II				
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	Hours/ Week 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	Hours/ Week L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
	Total Learning Credits				10

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)														
	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	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	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**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

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

Course Code	Course Title	Hours/ Week 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**

6. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week 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				**9**

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

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

Course Code	Course Title	Hours/ Week 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	Hours/ Week 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)														
		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
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	H	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	H	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	M	H	M	H	M	M	H	H	H	H
18CSE472T	Malware Analysis	M	H	M	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	M	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	M	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	M	H	H	H	H	H	H	M	M
18CSP110L	Semester Internship	H	H	H	H	H	M	M	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	Hours/ Week 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	Hours/ Week 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	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
	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
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	Hours/ Week 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	Hours/ Week 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	0	0	2	1
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills				
18PDM302L	Entrepreneurship Management	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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	0	0	2	1
18CSP105L	Industrial Training-II				
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	Hours/ Week 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	Hours/ Week L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
	Total Learning Credits				10

17. B.Tech. in Computer Science and Engineering with Specialization in Information Technology / B.Tech in Information Technology

17. (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*

17. (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 create local and global impact of computing on individuals, organizations, and society*
PEO - 6	*Graduates will use current techniques, skills and tools necessary for computing practice.*

17. (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*	*L*	*H*	
PEO - 6	*H*	*L*	*L*	*H*	*H*

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

17. (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	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*	*H*	*L*	*L*	*L*	*L*	*L*	*H*	*H*	*H*	*H*	*H*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to Utilize Concepts and Practices in Information Technology*
PSO - 2	*Evaluate and Administer Information Technology Systems*
PSO - 3	*Effective Integration of Information Technology Systems and Practices*

17. (e) Program Structure: B.Tech. in Computer Science and Engineering with Specialization in Information Technology / B. Tech in Information Technology

1. 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**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSE361T	Web Programming	3	0	0	3
18CSE362T	Integrative Programming and Technology	3	0	0	3
18CSE364T	System Administration and Maintenance	3	0	0	3
18CSE365T	Fundamentals of Virtualization	3	0	0	3
18CSE360T	Information Storage and Management	3	0	0	3
18CSE366T	Human Computer Interaction	3	0	0	3
18CSE397T	Computational Data Analysis	3	0	0	3
18CSE452T	Network Protocols and Programming	3	0	0	3
18CSE451T	Wireless Sensor Networks	3	0	0	3
18CSE461T	Internet Security and Cyber Forensics	3	0	0	3
18CSE462T	Data Centre Administration and Management	3	0	0	3
18CSE463T	IT Service Management and Operations	3	0	0	3
18CSE464T	Computer Graphics and Game programming	3	0	0	3
18CSE465T	Computational Media	3	0	0	3
	Total Learning Credits				**18**

6. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week 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				**9**

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	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

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

Course Code	Course Title	Hours/ Week 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**

17. (f)Program Articulation: B.Tech. in Computer Science and Engineering with Specialization in Information Technology / B. Tech in Information Technology

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
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	H	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
18CSE361T	Web Programming	L	M	H	L	H	L	L	L	L	L	L	M	M	L	L
18CSE362T	Integrative Programming and Technology	L	M	H	L	H	L	L	L	L	L	L	L	L	L	H
18CSE364T	System Administration and Maintenance	L	L	L	H	L	L	M	H	L	L	L	M	L	L	L
18CSE365T	Fundamentals of Virtualization	L	L	L	H	H	L	L	L	L	L	L	L	L	M	L
18CSE360T	Information Storage and Management	L	L	L	M	L	L	H	L	L	L	M	L	L	H	L
18CSE366T	Human Computer Interaction	L	L	L	M	H	L	L	L	M	L	L	L	L	M	L
18CSE397T	Computational Data Analysis	L	L	L	H	H	L	L	L	L	L	L	L	M	L	L
18CSE452T	Network Protocols and Programming	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L
18CSE451T	Wireless Sensor Networks	L	L	L	H	L	L	L	L	L	L	L	L	H	M	L
18CSE461T	Internet Security and Cyber Forensics	L	M	L	H	L	L	M	L	L	L	L	L	L	M	M
18CSE462T	Data Centre Administration and Management	L	M	L	H	L	L	H	L	L	L	M	L	L	L	M
18CSE463T	IT Service Management and Operations	L	H	L	H	L	L	M	L	L	L	M	L	L	L	L
18CSE464T	Computer Graphics and Game programming	L	L	H	L	H	L	L	L	H	L	L	L	L	M	L
18CSE465T	Computational Media	L	L	H	L	H	L	L	L	H	L	L	L	L	M	L
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	M	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	M	H	H	H	H	H	H	M	M
18CSP110L	Semester Internship	H	H	H	H	H	M	M	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

17. (g) Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Information Technology / B. Tech in Information Technology

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
	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
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	Hours/ Week 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	Hours/ Week 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	0	0	2	1
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills				
18PDM302L	Entrepreneurship Management	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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	0	0	2	1
18CSP105L	Industrial Training-II				
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	Hours/ Week 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	Hours/ Week L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
	Total Learning Credits				10

18. B.Tech. in Computer Science and Engineering with Specialization in Internet of Things

18. (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*

18. (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 skills to design computing systems based on Internet of Things*
PEO - 6	*Graduates will havethe ability to develop tools incorporating the skills acquired in Internet of Things domain.*

18. (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	*H*	*H*	*H*	*H*	*H*

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

18. (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	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*	*H*	*L*	*L*	*L*	*L*	*L*	*H*	*H*	*H*	*H*	*H*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to Utilize Hardware / Core CS Principles*
PSO - 2	*Ability to Create Software & Programming*
PSO - 3	*Ability to Develop Internet of Things based systems*

18. (e) Program Structure: B.Tech. in Computer Science and Engineering with Specialization in Internet of Things

1. 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**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSE377T	Data Centric Networks	3	0	0	3
18CSE345T	Internet of Things Architecture and Protocols	3	0	0	3
18CSE392T	Machine Learning-I	3	0	0	3
18CSE388T	Artificial Neural Networks	3	0	0	3
18CSE346T	Network Programming	3	0	0	3
18CSE451T	Wireless Sensor Networks	3	0	0	3
18CSE456T	Software Defined Networks	3	0	0	3
18CSE445T	Internet of Things Security	3	0	0	3
18CSE458T	Wireless and Mobile Communication	3	0	0	3
18CSE446T	Advanced Database Systems	3	0	0	3
18CSE447T	Edge Computing	3	0	0	3
18CSE448T	Energy Management for Internet of Things devices	3	0	0	3
18CSE490T	Big Data Visualization	3	0	0	3
	Total Learning Credits				**18**

6. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week 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				**9**

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

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

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

18. (f)Program Articulation: B.Tech. in Computer Science and Engineering with Specialization in Internet of Things

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
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	H	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
18CSE377T	Data Centric Networks	H	H	H	H	H	M	M	M	H	H	M	H	H	H	H
18CSE345T	Internet of Things Architecture and Protocols	H	H	H	H	H	M	H	H	M	H	H	M	H	H	H
18CSE392T	Machine Learning-I	H	H	H	M	H	M	L	M	H	M	L	H	L	H	H
18CSE388T	Artificial Neural Networks	H	H	H	M	H	M	L	M	H	M	L	H	L	H	H
18CSE346T	Network Programming	H	H	H	H	H	M	M	M	M	H	H	H	H	H	H
18CSE451T	Wireless Sensor Networks	H	H	H	H	M	M	M	M	M	H	L	H	H	H	H
18CSE456T	Software Defined Networks	H	H	H	H	H	M	M	M	M	H	M	H	H	H	H
18CSE445T	Internet of Things Security	H	H	H	H	H	M	M	H	H	H	M	H	H	H	H
18CSE458T	Wireless and Mobile Communication	H	H	H	H	M	H	H	H	M	H	M	H	H	H	H
18CSE446T	Advanced Database Systems	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE447T	Edge Computing	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSE448T	Energy Management for Internet of Things Devices	H	H	H	H	H	H	H	H	M	H	M	H	H	H	H
18CSE449T	Data Analysis and Visualization	M	H	H	H	H	M	M	H	H	H	H	H	M	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	M	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	M	H	H	H	H	H	H	M	M
18CSP110L	Semester Internship	H	H	H	H	H	M	M	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

18. (g) Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Internet of Things

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
	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
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	Hours/ Week 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	Hours/ Week 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	0	0	2	1
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills				
18PDM302L	Entrepreneurship Management	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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	0	0	2	1
18CSP105L	Industrial Training-II				
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	Hours/ Week 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	Hours/ Week L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
	Total Learning Credits				10

19. B.Tech. in Computer Science and Engineering with Specialization in Software Engineering

19. (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*

19. (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 Eng.*
PEO - 4	*Graduates will be ethically and socially responsible solution providers and entrepreneurs in Computer Science and other engineering disciplines.*
PEO - 5	*Graduates will be equipped with knowledge in the field of software engineering including scientific principles, analysis techniques, design methodologies, build and maintain secured software system to meet the demands and challenges of the growing software industry*
PEO - 6	*Graduates will be an agile software engineer with comprehensive set of skills to solve the dynamic global computing field software engineering, product development and management engineering.*

19. (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*	*M*
PEO - 6	*H*	*M*	*H*	*H*	*H*

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

19. (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	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*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*
PEO - 6	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to Build secure software systems*
PSO - 2	*Ability to Solve Problems and reason logically*
PSO - 3	*Ability to Develop software for desired needs*

19. (e) Program Structure: B.Tech. in Computer Science and Engineering with Specialization in Software Engineering

1. 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**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSE367T	Requirements Engineering	3	0	0	3
18CSE368T	Software Architecture and Design	3	0	0	3
18CSE369T	Software Modeling and Analysis	3	0	0	3
18CSE370T	Design Patterns	3	0	0	3
18CSE371T	User Interface Design	3	0	0	3
18CSE372T	Visual Programming	3	0	0	3
18CSE373T	Programming in Java Script	3	0	0	3
18CSE374T	Software Engineering Tools	3	0	0	3
18CSE459T	Service Oriented Architecture	3	0	0	3
18CSE466T	Software Verification and Validation	3	0	0	3
18CSE467T	Software Quality Assurance	3	0	0	3
18CSE468T	Software Measurements and Metrics	3	0	0	3
18CSE469T	Software Process and Agile Practices	3	0	0	3
18CSE470T	Software Security	3	0	0	3
18CSE471T	Software Maintenance and Administration	3	0	0	3
	Total Learning Credits				**18**

6. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week 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				**9**

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

Course Code	Course Title	Hours/ Week 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)

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

8. Mandatory Courses (M)

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

19. (f)Program Articulation: B.Tech. in Computer Science and Engineering with Specialization in Software 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
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*	*H*	*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*
18CSE367T	*Requirements Engineering*	*H*	*H*	*M*	*H*	*M*	*H*	*M*	*H*	*H*	*H*	*M*	*H*	*M*	*M*	*H*
18CSE368T	*Software Architecture and Design*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE369T	*Software Modeling and Analysis*	*H*	*H*	*M*	*H*	*M*	*H*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE370T	*Design Patterns*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*H*	*M*	*H*	*L*	*H*	*H*
18CSE371T	*User Interface Design*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*H*	*M*	*H*	*L*	*H*	*H*
18CSE372T	*Visual Programming*	*H*	*H*	*M*	*M*	*H*	*L*	*L*	*M*	*H*	*M*	*L*	*H*	*M*	*H*	*H*
18CSE373T	*Programming in Java Script*	*H*	*H*	*M*	*M*	*H*	*L*	*L*	*M*	*H*	*M*	*L*	*H*	*M*	*H*	*H*
18CSE374T	*Software Engineering Tools*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE459T	*Service Oriented Architecture*	*H*	*H*	*M*	*H*	*M*	*H*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE466T	*Software Verification and Validation*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE467T	*Software Quality Assurance*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE468T	*Software Measurements and Metrics*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE469T	*Software Process and Agile Practices*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE470T	*Software Security*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*H*
18CSE471T	*Software Maintenance and Administration*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*H*	*H*	*H*	*M*	*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*	*M*	*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*	*M*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*M*
18CSP110L	*Semester Internship*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*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*

19. (g) Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Software Engineering

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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	0	0	2	0
18GNM103L	NCC				
18GNM104L	NSO				
	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
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	Hours/ Week 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	Hours/ Week 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	0	0	2	1
18CSP102L	Industrial Training-I	0	0	2	1
18CSP103L	Seminar - I	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills				
18PDM302L	Entrepreneurship Management	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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	0	0	2	1
18CSP105L	Industrial Training-II				
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	Hours/ Week 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	Hours/ Week L	T	P	C
18CSP109L	Project	0	0	20	10
18CSP110L	Semester Internship				
	Total Learning Credits				10

20. B.Tech. in Computer Science and Business Systems

(In Collaboration with TCS)

20. (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*

20. (b) Program Educational Objectives (PEO)

PEO - 1	*Graduates will be able to perform in technical/managerial roles by thorough understanding of contemporary technologies*
PEO - 2	*Graduates will be able to successfully pursue higher education in reputed institutions where information technology businesses are a priority*
PEO - 3	*Graduates will be able to apply technology abstraction and common business principles*
PEO - 4	*Graduates will be able to demonstrate innovation abilities.*
PEO - 5	*Graduates will be able to demonstrate ethics and responsibility and have accumulated life values*

20. (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*	*M*	*M*	*H*

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

20. (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	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*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*H*	*H*	*H*	*H*	*H*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to understand client requirements and suggest solutions*
PSO - 2	*Ability to create innovative Software for business and service orientations*
PSO - 3	*Ability to utilize Logic & Reasoning Skills*

20. (e) Program Structure: B.Tech. in Computer Science and Business Systems

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

Course Code	Course Title	Hours/ Week L	T	P	C
18MBH161T	Business Communication & Value Science - I	2	0	0	2
18MBH162T	Business Communication & Value Science - II	2	0	0	2
18MBH163T	Fundamentals of Economics	2	0	0	2
18MBH261T	Introduction to Innovation, IP Management and Entrepreneurship	3	0	0	3
18MBH262J	Design Thinking	2	0	2	3
18MBH361T	Business Communication & Value Science – III	2	0	0	2
18MBH362T	Business Communication & Value Science - IV	2	0	0	2
18MBH363T	Fundamentals of Management	2	0	0	2
18MBH364T	Business Strategy	2	0	0	2
18MBH365T	Financial and Cost Accounting	2	0	0	2
18MBH461T	Financial Management	2	0	0	2
18MBH462T	Human Resource Management	2	0	0	2
18MBH463J	Services Science and Service Operational Management	3	0	2	4
18MBH464J	IT Project Management	3	0	2	4
18MBH465T	Marketing Research and Marketing Management	2	0	0	2
	Total Learning Credits				**36**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week L	T	P	C
18PYB161J	Fundamentals of Physics	2	0	2	3
18MAB161T	Discrete Mathematics	3	1	0	4
18MAB162T	Probability and Statistics	3	0	0	3
18MAB163T	Linear Algebra	3	1	0	4
18MAB164J	Statistical Modeling	3	0	2	4
18MAB261J	Operations Research	2	0	2	3
	Total Learning Credits				**21**

3. Engineering Science Courses (S)

Course Code	Course Title	Hours/ Week L	T	P	C
18EES161J	Principles of Electrical Engineering	2	0	2	3
18EES162J	Principles of Electronics	2	0	2	3
	Total Learning Credits				**6**

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week L	T	P	C
18CSC161J	Fundamentals of Computer Science	3	0	4	5
18CSC162J	Data Structures and Algorithms	3	0	4	5
18CSC261T	Formal Language and Automata Theory	3	0	0	3
18CSC262J	Computer Organization and Architecture	3	0	2	4
18CSC263J	Object Oriented Programming	2	0	4	4
18CSC264J	Computational Statistics	3	0	2	4
18CSC265J	Software Engineering	3	0	2	4
18CSC266J	Operating Systems	3	0	2	4
18CSC267J	Database Management Systems	3	0	2	4
18CSC268J	Software Design with UML	2	0	2	3
18CSC361J	Design and Analysis of Algorithms	3	0	2	4
18CSC362J	Compiler Design	3	0	2	4
18CSC363J	Computer Networks	3	0	2	4
18CSC364J	Information Security	3	0	2	4
18CSC365J	Artificial Intelligence	3	0	2	4
18CSC461J	Usability Design of Software Applications	2	0	2	3
18CSC462J	IT Workshop using Scilab	1	0	2	2
	Total Learning Credits				**65**

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

Course Code	Course Title	Hours/ Week L	T	P	C
	Professional Elective - 1				
18CSE361J	Conversational Systems	2	0	2	3
18CSE362J	Cloud, Microservices& Application	2	0	2	3
18CSE363J	Machine Learning	2	0	2	3
	Professional Elective - 2				
18CSE364J	Robotics and Embedded Systems	2	0	2	3
18CSE365J	Modern Web Applications	2	0	2	3
18CSE366J	Data Mining and Analytics	2	0	2	3
	Professional Elective - 3				
18CSE467J	Enterprise Systems	2	0	2	3
18CSE468J	Advance Finance	2	0	2	3
18CSE469J	Image Processing and Pattern Recognition	2	0	2	3
	Professional Elective - 4				
18CSE461J	Cognitive Science & Analytics	2	0	2	3
18CSE462J	Introduction to IoT	2	0	2	3
18CSE463J	Cryptology	2	0	2	3
	Professional Elective - 5				
18CSE464J	Quantum Computation & Quantum Information	2	0	2	3
18CSE465J	Advanced Social, Text and Media Analytics	2	0	2	3
18CSE466J	Mobile Computing	2	0	2	3
	Total Learning Credits				**15**

Open Elective Courses (O)
(Any 1 Courses))

Course Code	Course Title	Hours/ Week L	T	P	C
18CSO161T	Behavioral Economics	2	1	0	3
18CSO162T	Computational Finance & Modeling	2	1	0	3
18CSO163T	Psychology	2	1	0	3
	Total Learning Credits				**3**

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSP361L	Mini Project - 1	0	0	2	1
18CSP461L	Project Evaluation - 1	0	0	6	3
18CSP462L	Project Evaluation - 2	0	0	20	10
	Total Learning Credits				**14**

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
18PDM202L	Critical and Creative Thinking Skills	0	0	2	0
18PDM301L	Analytical and Logical Thinking Skills	0	0	2	0
18LEM101T	Constitution of India	1	0	0	0
18LEM102J	Value Education	1	0	1	0
18LEM10XJ	Chinese / French / German / Japanese/ Korean	2	0	2	0

8. Mandatory Courses (M)

Code	Course Title	L	T	P	C
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

20. (f) Program Articulation: B.Tech. in Computer Science and Business Systems

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
18PYB161J	Fundamentals of Physics	H	H	H	H	H	M	L	M	H	M	M	H	H	H	M
18MAB161T	Discrete Mathematics	H	H	H	H	M	L	L	L	M	M	L	H	H	H	H
18MAB162T	Probability and Statistics	H	H	H	H	M	M	L	L	M	M	L	H	H	H	H
18MAB163T	Linear Algebra	M	H	M	H	M	M	L	M	M	M	M	H	L	H	H
18MAB164J	Statistical Modeling	M	H	H	H	H	M	L	M	M	M	M	H	L	H	H
18MAB261J	Operations Research	H	H	H	M	H	M	L	M	H	M	M	H	L	H	H
18EES161J	Principles of Electrical Engineering	H	H	H	H	H	L	L	M	H	H	L	H	H	H	H
18EES162J	Principles of Electronics	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18MBH161T	Business Communication & Value Science – I	H	H	M	M	H	L	L	M	H	M	L	H	L	H	H
18MBH162T	Business Communication & Value Science – II	H	H	H	H	M	L	L	M	H	M	M	H	L	H	H
18MBH163T	Fundamentals of Economics	H	H	H	H	H	M	L	M	H	H	M	H	L	H	H
18MBH261T	Introduction to Innovation, IP Management and Entrepreneurship	H	M	H	M	L	L	L	M	L	L	L	M	H	M	M
18MBH262J	Design Thinking	H	H	H	H	M	M	L	M	M	M	M	H	L	H	H
18MBH361T	Business Communication & Value Science – III	H	H	H	H	H	M	L	M	H	M	M	H	H	H	M
18MBH362T	Business Communication & Value Science – IV	H	H	H	H	H	H	H	H	H	H	H	H	L	H	M
18MBH363T	Fundamentals of Management	H	H	M	M	H	L	L	M	H	M	L	H	L	H	H
18MBH364T	Business Strategy	H	H	H	H	L	L	L	L	M	M	L	H	H	H	H
18MBH365T	Financial and Cost Accounting	H	H	H	H	H	M	L	M	H	M	M	H	H	H	M
18MBH461T	Financial Management	H	H	H	H	H	M	L	M	H	M	M	H	H	H	M
18MBH462T	Human Resource Management	H	H	H	H	M	L	L	L	M	M	L	H	H	H	H
18MBH463J	Services Science and Service Operational Management	H	H	H	H	M	M	L	L	M	M	L	H	H	H	H
18MBH464J	IT Project Management	M	H	M	H	M	M	L	M	M	M	M	H	L	H	H
18MBH465T	Marketing Research and Marketing Management	M	H	H	H	H	M	L	M	M	M	M	H	L	H	H
18CSC161J	Fundamentals of Computer Science	H	H	H	M	H	M	L	M	H	M	M	H	L	H	H
18CSC162J	Data Structures and Algorithms	H	H	H	H	H	L	L	M	H	H	L	H	H	H	H
18CSC261T	Formal Language and Automata Theory	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSC262J	Computer Organization and Architecture	H	H	H	H	H	M	L	M	H	M	M	H	H	H	M
18CSC263J	Object Oriented Programming	M	H	H	H	M	M	H	M	H	M	M	H	H	H	H
18CSC264J	Computational Statistics	H	H	H	H	H	M	M	M	M	M	M	H	L	H	H
18CSC265J	Software Engineering	H	H	H	H	H	H	L	M	H	M	M	H	M	H	H
18CSC266J	Operating Systems	H	H	H	H	M	H	H	M	H	M	H	H	H	M	H
18CSC267J	Database Management Systems	H	H	H	H	M	M	M	M	M	H	L	H	H	H	H
18CSC268J	Software Design with UML	H	H	H	H	M	M	M	M	M	H	L	H	H	H	H
18CSC361J	Design and Analysis of Algorithms	H	H	H	H	M	M	M	M	M	H	L	H	H	H	H
18CSC362J	Compiler Design	H	H	H	H	H	L	L	M	H	H	L	H	H	H	H
18CSC363J	Computer Networks	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18CSC364J	Information Security	H	H	H	H	H	M	M	M	M	H	M	H	H	H	H
18CSC365J	Artificial Intelligence	M	H	H	H	H	M	L	M	M	H	M	H	M	H	H
18CSC461J	Usability Design of Software Applications	H	H	H	H	M	H	H	H	M	H	M	H	H	H	H
18CSC462J	IT Workshop using Scilab	M	H	H	H	H	M	M	M	M	H	M	H	H	H	H
18CSP361L	Mini Project – 1	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP461L	Project Evaluation – 1	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP462L	Project Evaluation – 2	H	H	H	H	H	M	M	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

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

20. (g) Implementation Plan: B.Tech. in Computer Science and Business Systems

Semester - I

Code	Course Title	Hours/ Week L	T	P	C
18MBH161T	Business Communication & Value Science - I	2	0	0	2
18PYB161J	Fundamentals of Physics	2	0	2	3
18MAB161T	Discrete Mathematics	3	1	0	4
18MAB162T	Probability and Statistics	3	0	0	3
18EES161J	Principles of Electrical Engineering	2	0	2	3
18CSC161J	Fundamentals of Computer Science	3	0	4	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	Hours/ Week L	T	P	C
18MBH162T	Business Communication & Value Science - II	2	0	0	2
18MBH163T	Fundamentals of Economics	2	0	0	2
18MAB163T	Linear Algebra	3	1	0	4
18MAB164J	Statistical Modeling	3	0	2	4
18EES162J	Principles of Electronics	2	0	2	3
18CSC162J	Data Structures and Algorithms	3	0	4	5
18LEM102J	Value Education	1	0	1	0
18GNM10XL	NCC / NSS / NSO	0	0	2	0
18LEM10XJ	Chinese / French / German / Japanese/ Korean	2	0	2	0
	Total Learning Credits				20

Semester - III

Code	Course Title	Hours/ Week L	T	P	C
18MBH461T	Financial Management	2	0	0	2
18MBH462T	Human Resource Management	2	0	0	2
18CSC261T	Formal Language and Automata Theory	3	0	0	3
18CSC262J	Computer Organization and Architecture	3	0	2	4
18CSC263J	Object Oriented Programming	2	0	4	4
18CSC264J	Computational Statistics	3	0	2	4
18CSC265J	Software Engineering	3	0	2	4
18PDM201L	Competencies in Social Skills	0	0	2	0
	Total Learning Credits				23

Semester - IV

Code	Course Title	Hours/ Week L	T	P	C
18MBH261T	Introduction to Innovation, IP Management and Entrepreneurship	3	0	0	3
18MBH465T	Marketing Research and Marketing Management	2	0	0	2
18MBH262J	Design Thinking	2	0	2	3
18MAB261J	Operations Research	2	0	2	3
18CSC266J	Operating Systems	3	0	2	4
18CSC267J	Database Management Systems	3	0	2	4
18CSC268J	Software Design with UML	2	0	2	3
18PDM202L	Critical and Creative Thinking Skills	0	0	2	0
18CYM101T	Environmental Science	1	0	0	0
	Total Learning Credits				22

Semester - V

Code	Course Title	Hours/ Week L	T	P	C
18MBH361T	Business Communication & Value Science - III	2	0	0	2
18MBH363T	Fundamentals of Management	2	0	0	2
18MBH364T	Business Strategy	2	0	0	2
18CSC361J	Design and Analysis of Algorithms	3	0	2	4
18CSC362J	Compiler Design	3	0	2	4
	Professional Elective – 1	2	0	2	3
	Open Elective – 1	2	0	2	3
18CSP361L	Mini Project – 1	0	0	2	1
18PDM301L	Analytical and Logical Thinking Skills	0	0	2	0
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				21

Semester - VI

Code	Course Title	Hours/ Week L	T	P	C
18MBH362T	Business Communication & Value Science - IV	2	0	0	2
18MBH365T	Financial and Cost Accounting	2	0	0	2
18CSC365J	Artificial Intelligence	3	0	2	4
18CSC364J	Information Security	3	0	2	4
18CSC363J	Computer Networks	3	0	2	4
	Professional Elective – 2	2	0	2	3
	Professional Elective – 3	2	0	2	3
18LEM110L	Indian Art Form	0	0	2	0
	Total Learning Credits				22

Semester – VII

Code	Course Title	Hours/ Week L	T	P	C
18MBH463J	Services Science and Service Operational Management	3	0	2	4
18MBH464J	IT Project Management	3	0	2	4
18CSC461J	Usability Design of Software Applications	2	0	2	3
18CSC462J	IT Workshop using Scilab	1	0	2	2
	Professional Elective – 4	2	0	2	3
	Professional Elective – 5	2	0	2	3
18CSP461L	Project Evaluation – 1	0	0	6	3
	Total Learning Credits				22

Semester - VIII

Code	Course Title	Hours/ Week L	T	P	C
18CSP462L	Project Evaluation –2	0	0	20	10
	Total Learning Credits				10

B.Tech. in Computer Science and Engineering with Specialization in Blockchain Technology

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*

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 be able to explore recent technological developments related to Systems Engineering.*
PEO - 6	*Graduates will have the ability to explore research areas and produce outstanding contribution in various areas of Systems Engineering.*

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*	*M*	*M*	*H*
PEO - 6	*M*	*H*	*H*	*H*	*H*

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

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	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*	*H*	*H*	*H*	*H*	*H*	*H*	*L*	*L*	*L*	*L*	*L*	*H*	*H*	*L*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to apply the techniques and tools of Block chain Technology*
PSO - 2	*Create new Algorithms and techniques with Block chain concepts*
PSO - 3	*Ability to Develop systems involving Block chain fundamentals*

Program Structure:B.Tech. in Computer Science and Engineering with Specialization in Blockchain Technology

1. 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**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

5. Professional Elective Courses (E)

(Any 6 Elective Courses)

Course Code	Course Title	Hours/ Week L	T	P	C
18CSE332T	Distributed Systems and Applications	3	0	0	3
18CSE333T	Big Data Tools and Techniques for Blockchain	2	0	2	3
18CSE334T	Blockchain using Cryptography	3	0	0	3
18CSE335T	Principles of Cryptography	3	0	0	3
18CSE431T	Distributed Ledger Technology	2	0	2	3
18CSE432T	Smart Contracts and Application Development	3	0	0	3
18CSE433T	Trust based computing	3	0	0	3
18CSE434T	Web3 Development	2	0	2	3
18CSE435T	Advanced Cryptography	2	0	2	3
	Total Learning Credits				**18**

6. Open Elective Courses (O)
(Any 3 Open Elective Courses)

Course Code	Course Title	Hours/ Week 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				**09**

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
19PDM302L	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

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSP101L	MOOC / Industrial Training / Seminar - 1	0	0	2	1
18CSP102L	MOOC / Industrial Training / Seminar - 2	0	0	2	1
18CSP103L	Project (Phase-I) / Internship (4-6 weeks)	0	0	6	3
18CSP104L	Project (Phase-II) / Semester Internship	0	0	20	10
	Total Learning Credits				**15**

8. Mandatory Courses (M)

Course Code	Course Title	Hours/ Week L	T	P	C
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

Program Articulation:B.Tech. in Computer Science and Engineering with Specialization in Blockchain Technology

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
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*	*H*	*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*
18CSE332T	*Distributed Systems and Applications*	*H*	*H*	*H*	*M*	*H*	*M*	*L*	*M*	*H*	*M*	*L*	*H*	*L*	*H*	*H*
18CSE333T	*Big Data Tools and Techniques for Blockchain*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*M*	*L*	*H*	*L*	*H*	*H*
18CSE334T	*Blockchain using Cryptography*	*H*	*H*	*H*	*H*	*M*	*M*	*L*	*M*	*H*	*M*	*M*	*H*	*L*	*H*	*H*
18CSE335T	*Principles of Cryptography*	*H*	*H*	*H*	*M*	*H*	*M*	*L*	*M*	*H*	*M*	*M*	*H*	*L*	*H*	*H*
18CSE431T	*Distributed Ledger Technology*	*H*	*H*	*H*	*H*	*H*	*H*	*L*	*M*	*H*	*M*	*M*	*H*	*M*	*H*	*H*
18CSE432T	*Smart Contracts and Application Development*	*H*	*H*	*H*	*H*	*M*	*M*	*L*	*M*	*H*	*M*	*L*	*H*	*M*	*H*	*H*
18CSE433T	*Trust based computing*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*M*	*M*	*H*	*M*	*H*	*H*
18CSE434T	*Web3 Development*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*M*	*L*	*H*	*M*	*H*	*H*
18CSE435T	*Advanced Cryptography*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*M*	*M*	*H*	*M*	*H*	*H*
18CSP101L	*MOOC / Industrial Training / Seminar - 1*	*H*	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*
18CSP102L	*MOOC / Industrial Training / Seminar - 2*	*H*	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*
18CSP103L	*Project (Phase-I) / Internship (4-6 weeks)*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*M*
18CSP104L	*Project (Phase-II) / Semester Internship*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*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*

Implementation Plan: B.Tech. in Computer Science and Engineering with Specialization in Blockchain Technology

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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
18GNM10XL	NCC / NSS / NSO	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
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	Hours/ Week 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	Hours/ Week 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	MOOC / Industrial Training / Seminar - 1	0	0	2	1
18PDM301L	Analytical and Logical Thinking Skills	0	0	2	0
19PDM302L	Entrepreneurship Management				
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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
18CSC307L	Competitive Professional Skills - III	0	0	2	1
18CSC350T	Comprehension	0	1	0	1
	Professional Elective – 3	3	0	0	3
	Professional Elective – 4	3	0	0	3
	Open Elective – 2	3	0	0	3
18CSP102L	MOOC / Industrial Training / Seminar - 2	0	0	2	1
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	Hours/ Week 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
18CSP103L	Project (Phase-I) / Internship (4-6 weeks)	0	0	6	3
	Total Learning Credits				12

Semester - VIII

Code	Course Title	Hours/ Week L	T	P	C
18CSP104L	Project (Phase-II) / Semester Internship	0	0	20	10
	Total Learning Credits				10

B.Tech. in Computer Science and Engineering with Specialization in Gaming Technology

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*

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 be able to explore recent technological developments related to Systems Engineering.*
PEO - 6	*Graduates will have the ability to explore research areas and produce outstanding contribution in various areas of Systems Engineering.*

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*	*M*	*M*	*H*
PEO - 6	*M*	*H*	*H*	*H*	*H*

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

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	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*	*H*	*H*	*H*	*H*	*H*	*H*	*L*	*L*	*L*	*L*	*L*	*H*	*H*	*L*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	*Ability to apply the techniques and tools of Gaming Technology*
PSO - 2	*Create new Algorithms and techniques with Gaming concepts*
PSO - 3	*Ability to Develop systems involving Gaming fundamentals*

Program Structure:B.Tech. in Computer Science and Engineering with Specialization in Gaming Technology

1. 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**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week 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**

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

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week 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**

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSE336T	Design Thinking for Game Development	3	0	0	3
18CSE337J	Game Design, Prototyping and Development	2	0	2	3
18CSE338J	Computer Graphics	2	0	2	3
18CSE339J	Multimedia Tools and Applications	2	0	2	3
18CSE340J	GPU Programming	2	0	2	3
18CSE436T	Gaming Studio for Business	3	0	0	3
18CSE437J	Virtual Reality and Augmented Reality	2	0	2	3
18CSE438J	Computer Animation and Simulation	2	0	2	3
18CSE439J	Mobile Game Development	2	0	2	3
18CSE440T	Psychology and Economy of Games	3	0	0	3
	Total Learning Credits				**18**

6. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week 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				**09**

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
19PDM302L	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

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

Course Code	Course Title	Hours/ Week L	T	P	C
18CSP101L	MOOC / Industrial Training / Seminar - 1	0	0	2	1
18CSP102L	MOOC / Industrial Training / Seminar - 2	0	0	2	1
18CSP103L	Project (Phase-I) / Internship (4-6 weeks)	0	0	6	3
18CSP104L	Project (Phase-II) / Semester Internship	0	0	20	10
	Total Learning Credits				**15**

8. Mandatory Courses (M)

Course Code	Course Title	Hours/ Week L	T	P	C
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

Program Articulation:B.Tech. in Computer Science and Engineering with Specialization in Gaming Technology

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
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*	*H*	*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*
18CSE336T	*Design Thinking for Game Development*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*M*	*L*	*H*	*L*	*H*	*H*
18CSE337J	*Game Design, Prototyping and Development*	*H*	*H*	*H*	*M*	*H*	*M*	*L*	*M*	*H*	*M*	*L*	*H*	*L*	*H*	*H*
18CSE338J	*Computer Graphics*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*M*	*L*	*H*	*L*	*H*	*H*
18CSE339T	*Multimedia Tools and Applications*	*H*	*H*	*H*	*H*	*M*	*M*	*L*	*M*	*H*	*M*	*M*	*H*	*L*	*H*	*H*
18CSE340T	*GPU Programming*	*H*	*H*	*H*	*M*	*H*	*M*	*L*	*M*	*H*	*M*	*M*	*H*	*L*	*H*	*H*
18CSE436T	Gaming Studio for Business	*H*	*H*	*H*	*H*	*H*	*H*	*L*	*M*	*H*	*M*	*M*	*H*	*M*	*H*	*H*
18CSE437T	*Virtual Reality and Augmented Reality*	*H*	*H*	*H*	*H*	*M*	*M*	*L*	*M*	*H*	*M*	*L*	*H*	*M*	*H*	*H*
18CSE438J	*Computer Animation and Simulation*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*M*	*M*	*H*	*M*	*H*	*H*
18CSE439T	*Mobile Game Development*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*M*	*L*	*H*	*M*	*H*	*H*
18CSE440T	*Psychology and Economy of Games*	*H*	*H*	*H*	*H*	*H*	*M*	*L*	*M*	*H*	*M*	*M*	*H*	*M*	*H*	*H*
18CSP101L	*MOOC / Industrial Training / Seminar - 1*	*H*	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*
18CSP102L	*MOOC / Industrial Training / Seminar - 2*	*H*	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*H*	*H*	*H*	*M*	*H*	*H*	*H*
18CSP103L	*Project (Phase-I) / Internship (4-6 weeks)*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*H*	*H*	*H*	*H*	*H*	*H*	*M*	*M*
18CSP104L	*Project (Phase-II) / Semester Internship*	*H*	*H*	*H*	*H*	*H*	*M*	*M*	*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*

Implementation Plan:B.Tech. in Computer Science and Engineering with Specialization in Gaming Technology

Semester - I

Code	Course Title	Hours/ Week 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	Hours/ Week 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
18GNM10XL	NCC / NSS / NSO	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
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	Hours/ Week 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	Hours/ Week 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	MOOC / Industrial Training / Seminar - 1	0	0	2	1
18PDM301L	Analytical and Logical Thinking Skills	0	0	2	0
19PDM302L	Entrepreneurship Management				
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week 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
18CSC307L	Competitive Professional Skills - III	0	0	2	1
18CSC350T	Comprehension	0	1	0	1
	Professional Elective – 3	3	0	0	3
	Professional Elective – 4	3	0	0	3
	Open Elective – 2	3	0	0	3
18CSP102L	MOOC / Industrial Training / Seminar - 2	0	0	2	1
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	Hours/ Week 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
18CSP103L	Project (Phase-I) / Internship (4-6 weeks)	0	0	6	3
	Total Learning Credits				12

Semester - VIII

Code	Course Title	Hours/ Week L	T	P	C
18CSP104L	Project (Phase-II) / Semester Internship	0	0	20	10
	Total Learning Credits				10

B.Tech. in Artificial Intelligence

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*

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 be able to explore recent technological developments related to Systems Engineering.*
PEO - 6	*Graduates will have the ability to explore research areas and produce outstanding contribution in various areas of Systems Engineering.*

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*	*M*	*M*	*H*
PEO - 6	*M*	*H*	*H*	*H*	*H*

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

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	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*	*H*	*H*	*H*	*H*	*H*	*H*	*L*	*L*	*L*	*L*	*L*	*H*	*H*	*L*

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

PSO – Program Specific Outcomes (PSO)

PSO - 1	Ability to learn Artificial intelligence and related Principles
PSO - 2	Ability to Create new Techniques and develop algorithms for Artificial Intelligence
PSO - 3	Ability to Develop systems using techniques and tools relating to Artificial Intelligence

Program Structure: B.Tech. in Artificial Intelligence

1. 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
18AIH201T	Management Principles for Data Analysis	2	0	0	2
18AIH202T	Ethics and Policy Issues in AI Computing	2	0	0	2
18PDH201T	Employability Skills & Practices	0	0	2	1
	Total Learning Credits				**12**

2. Basic Science Courses (B)

Course Code	Course Title	Hours/ Week L	T	P	C
18PCB101J	Engineering Physics ,Chemistry and Biology	3	1	2	5
18AIB101J	Foundation of Data Analysis	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
18AIB102T	Probability for Machine Learning	3	1	0	4
18MAB302T	Discrete Mathematics for Engineers	3	1	0	4
18AIB201T	Convex Optimization and Applications	2	0	0	2
	Total Learning Credits				**32**

3. Engineering Science Courses (S)

Course Code	Course Title	Hours/ Week L	T	P	C
18AIS101J	Introduction to MATLAB for Artificial Intelligence	1	0	4	3
18EES101J	Basic Electrical and Electronics Engineering	3	1	2	5
18AIS102J	Smart Manufacturing	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**

4. Professional Core Courses (C)

Course Code	Course Title	Hours/ Week L	T	P	C
18CSC201J	Data Structures and Algorithms	3	0	2	4
18AIC201J	Application Based Programming using Python	3	0	2	4
18AIC202J	Foundation of Artificial Intelligence and Machine Learning	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
18AIC203J	Data Analytics	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
18AIC301J	Neural Networks and Deep Learning	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**

5. Professional Elective Courses (E)

(Any 6 Elective Courses)

Course Code	Course Title	Hours/ Week L	T	P	C
18AIE321T	Logic and Knowledge Representation	3	0	0	3
18AIE322T	Numerical Mathematics for Data Science	3	0	0	3
18AIE323T	Machine Learning Optimization Algorithms	3	0	0	3
18AIE324T	Big Data Frameworks – Hadoop, Spark and NoSQL	3	0	0	3
18AIE325T	Deep Learning: Theory and Practice	3	0	0	3
18AIE326T	Graph Analytics for Big Data	3	0	0	3
18AIE327T	Complex Network Analysis and Visualization	3	0	0	3
18AIE328T	Bioinformatics	3	0	0	3
18AIE329T	Robotics and Intelligent Systems	3	0	0	3
18AIE330T	Stochastic Decision Making	3	0	0	3
18AIE331T	Building and Mining Knowledge Graphs	3	0	0	3
18AIE332T	Pattern Recognition Algorithms	3	0	0	3
18CSE359T	Natural Language Processing	3	0	0	3
18AIE421T	Intelligent Autonomous Systems	3	0	0	3
18AIE422T	Speech Processing	3	0	0	3
18AIE423T	Design of Artificial Intelligence Products	3	0	0	3
18AIE424T	Reinforcement Learning	3	0	0	3
18AIE425T	Data Privacy by Design	3	0	0	3
	Total Learning Credits				**18**

6. Open Elective Courses (O)

(Any 3 Open Elective Courses)

Course Code	Course Title	Hours/ Week L	T	P	C
	Vertical Open Elective - 1	3	0	0	3
	Vertical Open Elective – 2	3	0	0	3
	Vertical Open Elective -3	3	0	0	3

Students need to choose any 3 subjects from anyone vertical.

1. Smart Healthcare
2. Robotics
3. Business Analytics
4. Infrastructure
5. Cyber Security and Intelligence
6. Agriculture

Total Learning Credits **09**

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
19PDM302L	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

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

Course Code	Course Title	Hours/ Week L	T	P	C
18AIP101L	MOOC / Industrial Training / Seminar - 1	0	0	2	1
18AIP102L	MOOC / Industrial Training / Seminar - 2	0	0	2	1
18AIP103L	Project (Phase-I) / Internship (4-6 weeks)	0	0	6	3
18AIP104L	Project (Phase-II) / Semester Internship	0	0	20	10
	Total Learning Credits				**15**

8. Mandatory Courses (M)

Course Code	Course Title	Hours/ Week L	T	P	C
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

Program Articulation: B.Tech in Artificial Intelligence

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
18CSC201J	Data Structures and Algorithms	H	H	H	H	M	L	L	M	H	M	M	H	L	H	H
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
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
18AIH201T	Management Principles for Data Analysis	M	M	M	M	H	H	H	H	H	H	H	H	H	H	H
18AIH202T	Ethics and Policy Issues in AI Computing	M	M	M	M	L	H	H	H	M	H	H	H	H	H	H
18AIB101J	Foundation of Data Analysis	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIB102T	Probability for Machine Learning	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIB201T	Convex Optimization and Applications	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIS101J	Introduction to MATLAB for Artificial Intelligence	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIS102J	Smart Manufacturing	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18AIC201J	Application Based Programming using Python	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIC202J	Foundation of Artificial Intelligence and Machine Learning	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIC203J	Data Analytics	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIC301J	Neural Networks and Deep Learning	H	H	H	H	H	M	M	L	M	M	M	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
18AIE321T	Logic and Knowledge Representation	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE322T	Numerical Mathematics for Data Science	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE323T	Machine Learning Optimization Algorithms	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE324T	Big Data Frameworks – Hadoop, Spark and NoSQL	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE325T	Deep Learning: Theory and Practice	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE326T	Graph Analytics for Big Data	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE327T	Complex Network Analysis and Visualization	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE328T	Bioinformatics	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE329T	Robotics and Intelligent Systems	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE330T	Stochastic Decision Making	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE331T	Building and Mining Knowledge Graphs	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE332T	Pattern Recognition Algorithms	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE421T	Intelligent Autonomous Systems	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE422T	Speech Processing	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE423T	Design of Artificial Intelligence Products	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIR424T	Reinforcement Learning	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18AIE425T	Data Privacy by Design	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18CSE359T	Natural Language Processing	H	H	H	H	H	M	M	L	M	M	M	H	H	H	H
18CSP101L	MOOC / Industrial Training / Seminar - 1	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP102L	MOOC / Industrial Training / Seminar - 2	H	M	M	M	M	M	M	M	H	H	H	M	H	H	H
18CSP103L	Project (Phase-I) / Internship (4-6 weeks)	H	H	H	H	H	M	M	H	H	H	H	H	H	M	M
18CSP104L	Project (Phase-II) / Semester Internship	H	H	H	H	H	M	M	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

Implementation Plan: B.Tech in Artificial Intelligence

Semester - I

Code	Course Title	Hours/ Week L	T	P	C
18LEH101J	English	2	0	2	3
18MAB101T	Calculus and Linear Algebra	3	1	0	4
18PCB101J	Engineering Physics,Chemistry and Biology	3	1	2	5
18AIS101J	Introduction to MATLAB for Artificial Intelligence	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	Hours/ Week L	T	P	C
18LEH10XJ	Chinese / French / German / Japanese/ Korean	2	0	2	3
18MAB102T	Advanced Calculus and Complex Analysis	3	1	0	4
18AIB101J	Foundation of Data Analysis	3	1	2	5
18CSS101J	Programming for Problem Solving	3	0	4	5
18AIS102J	Smart Manufacturing	1	0	4	3
18PDH101T	General Aptitude	0	0	2	1
18LEM102J	Value Education	1	0	1	0
18GNM10XL	NCC / NSS / NSO	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
18AIB201T	Convex Optimization and Application	2	0	0	2
18CSS201J	Analog and Digital Electronics	3	0	2	4
18CSC201J	Data Structures and Algorithms	3	0	2	4
18AIC201J	Application Based Programming using Python	3	0	2	4
18AIC202J	Foundation of Artificial Intelligence and Machine Learning	3	0	2	4
18AIH201T	Management Principles for Data Analysis	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	Hours/ Week L	T	P	C
18AIB102T	Probability for Machine Learning	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
18AIC203J	Data Analytics	3	0	2	4
18CSC208L	Competitive Professional Skills - I	0	0	2	1
18AIH202T	Ethics and Policy Issues in AI Computing	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	Hours/ Week 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
18AIP101L	MOOC / Industrial Training / Seminar - 1	0	0	2	1
18PDM301L	Analytical and Logical Thinking Skills	0	0	2	0
19PDM302L	Entrepreneurship Management				
18LEM109T	Indian Traditional Knowledge	1	0	0	0
	Total Learning Credits				22

Semester - VI

Code	Course Title	Hours/ Week L	T	P	C
18CSC303J	Database Management Systems	3	0	2	4
18CSC304J	Compiler Design	3	0	2	4
18AIC301J	Neural Networks and Deep Learning	3	0	2	4
18CSC307L	Competitive Professional Skills - III	0	0	2	1
18CSC350T	Comprehension	0	1	0	1
	Professional Elective – 3	3	0	0	3
	Professional Elective – 4	3	0	0	3
	Open Elective – 2	3	0	0	3
18AIP102L	MOOC / Industrial Training / Seminar - 2	0	0	2	1
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	Hours/ Week 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
18AIP103L	Project (Phase-I) / Internship (4-6 weeks)	0	0	6	3
	Total Learning Credits				12

Semester - VIII

Code	Course Title	Hours/ Week L	T	P	C
18AIP104L	Project (Phase-II) / Semester Internship	0	0	20	10
	Total Learning Credits				10

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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

Kattankulathur, Chengalpattu District-603203, Tamil Nadu, India