Department of Computer Science & Engineering

Curriculum Structure

1st Semester to 8th Semester

(Effective from 2021-22 Admission Batch)

Curriculum for B.Tech under Autonomy
Computer Science & Engineering

L – Lecture; T- Tutorial; P- Practical [1L=1Cr, 1T=1Cr, 1P =0.5 Cr]

**** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET**

1ST Year 1st Semester: 1st Semester								
Sl. No.	Category	Course Code	Course Title	Hours per week				Credits
	A. THEORY			L	T	P	Total	
1	Basic Science course	PH101	Physics-I	3	0	0	3	3
2	Basic Science course	M101	Mathematics –I	4	0	0	4	4
3	Humanities and Social Sciences including Management	HSMC 101	Professional Communication	2	0	0	**2**	2
	B. PRACTICAL							
4	Basic Science course	PH191	Physics-I Lab	0	0	3	3	1.5
5	Engineering Science Courses	ME 191	Workshop & Manufacturing Practices Lab	0	0	3	3	1.5
6	PROJECT	PR191	Theme based Project I	0	0	1	1	0.5
7	PROJECT	PR192	Skill Development I: Soft Skill	0	0	1	1	0.5
	C. MANDATORY ACTIVITIES / COURSES							
8	Mandatory Course	MC181	Induction Program	0	0	0	0	2Units
	TOTAL CREDIT							13.0

1ST Year 2nd Semester: 2nd Semester								
Sl. No.	Category	Course Code	Course Title	Hours per week				Credits
	A. THEORY			L	T	P	Total	
1	Basic Science courses	CH 201	Chemistry-I	3	0	0	3	3
2	Basic Science courses	M 201	Mathematics –II	4	0	0	4	4
3	Engineering Science Courses	EE 201	Basic Electrical Engineering	3	0	0	3	3
4	Engineering Science Courses	CS 201	Programming for Problem Solving	3	0	0	3	3
	B. PRACTICAL							
5	Basic Science course	CH 291	Chemistry-I Lab	0	0	3	3	1.5
6	Humanities and Social Sciences including Management courses	HSMC 291	Professional Communication LAB	0	0	2	2	1.0
7	Engineering Science Courses	EE 291	Basic Electrical Engineering Lab	0	0	3	3	1.5
8	Engineering Science Courses	ME 292	Engineering Graphics & Design Lab	0	0	3	3	1.5
9	Engineering Science Courses	CS 291	Programming for Problem Solving Lab	0	0	3	3	1.5
10	PROJECT	PR291	Theme based Project II	0	0	1	1	0.5
11	PROJECT	PR292	Skill Development II: Life Skill	1	0	0	1	0.5
	C. MANDATORY ACTIVITIES / COURSES							
12	Mandatory Course	MC281	NSS/Physical Activities / Meditation & Yoga / Photography	0	0	3	3	3 Units
	TOTAL CREDIT							21

Collective Data from 3rd to 6th Semester (Summer/Winter Training during Semester Break & Internship should be done after 5th Semester or 6th Semester). All related certificates to be collected by the training/ internship coordinator(s).

**** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET**

2nd Year 1st Semester: 3rd Semester

Sl. No.	Category	Course Code	Course Title	Hours per week				Credits
				L	T	P	Total	
A. THEORY								
1	Basic Science course	M301	Discrete Mathematics	3	0	0	3	3
2	Engineering Science Courses	ESC301	Analog Electronics	3	0	0	3	3
3	Engineering Science Courses	ESC302	Digital Logic and Electronics	3	0	0	3	3
4	Program Core Course	PCC-CS301	IT Workshop (Sci Lab/MATLAB/C++)	3	0	0	3	3
5	Program Core Course	PCC-CS302	Data Structures	3	0	0	3	3
6	Humanities and Social Sciences including Management courses	HSMC 303	Universal Human Values 2: Understanding Harmony	3	0	0	3	3
B. PRACTICAL								
7	Engineering Science Courses	M (CS)391	Numerical Methods Lab	1	0	3	3	2.5
8	Engineering Science Courses	ESC391	Digital and Analog Electronics Lab	0	0	3	3	1.5
9	Program Core Course	PCC-CS391	IT Workshop Lab (Sci Lab/MATLAB/C++)	0	0	3	3	1.5
10	Program Core Course	PCC-CS392	Data Structures Lab	0	0	3	3	1.5
11	PROJECT	PR391	Theme based Project III	0	0	1	1	0.5
12	PROJECT	PR392	Skill Development III: Technical Seminar Presentation	1	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 301	Environmental Science		0	3	3	3 Units
	TOTAL CREDIT WITHOUT MOOCS COURSES							26.0
D.MOOCS COURSES**								
14	MOOCS COURSES	HM301	MOOCS COURSE-I		3	1	4	4
TOTAL CREDIT WITH MOOCS COURSES								**30**

Collective Data from 3rd to 6th Semester (Summer/Winter Training during Semester Break & Internship should be done after 5th Semester or 6th Semester). All related certificates to be collected by the training/ internship coordinator(s).

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2nd Year 2nd Semester: 4th Semester

Sl. No.	Category	Course Code	Course Title	Hours per week				Credits
				L	T	P	Total	
A. THEORY								
1	Program Core Course	PCC-CS401	Computer Organization and Architecture	3	0	0	3	3
2	Program Core Course	PCC-CS402	Design and Analysis of Algorithms	3	0	0	3	3
3	Program Core Course	PCC-CS403	Operating Systems	3	0	0	3	3
4	Program Core Course	PCC-CS404	Formal Language and Automata Theory	3	0	0	3	3
5	Humanities and Social Sciences including Management courses	HSMC 402	Gender Culture and Development	2	0	0	2	2
6	Basic Science course	BSC401	Probability and Statistics	3	0	0	3	3
B. PRACTICAL								
7	Program Core Course	PCC-CS491	Computer Organization and Architecture Lab	0	0	3	3	1.5
8	Program Core Course	PCC-CS492	Design and Analysis of Algorithms Lab	0	0	3	3	1.5
9	Program Core Course	PCC-CS493	Operating Systems Lab	0	0	3	3	1.5
10	Engineering Science Courses	ESC491	Programming using Python	0	0	3	3	1.5
11	PROJECT	PR 491	Theme based Project IV	0	0	1	1	0.5
12	PROJECT	PR492	Skill Development IV: Soft Skill & Aptitude-I	1	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
13	MC	MC 481	Learning an Art Form [vocal or instrumental, dance, painting, clay modeling, etc.] OR Environmental Protection Initiatives	0	0	0	3	3Units
	TOTAL CREDIT WITHOUT MOOCS COURSES							24
D.MOOCS COURSES								
14	MOOCS COURSES	HM401	MOOCS COURSE-II	3	1	0	4	4
TOTAL CREDIT WITH MOOCS COURSES								**28**

Collective Data from 3rd to 6th Semester (Summer/Winter Training during Semester Break & Internship should be done after 5th Semester or 6th Semester). All related certificates to be collected by the training/ internship coordinator(s).

**** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET**

3rd Year 1st Semester: 5th Semester								
Sl. No.	**Category**	**Course Code**	**Course Title**	**Hours per week**				**Credits**
				L	**T**	**P**	**Total**	
A. THEORY								
1	Humanities and Social Sciences including Management courses	HSMC 505	Principles of Management	2	0	0	2	2
2	Program Core Course	PCC-CS501	Compiler Design	3	0	0	3	3
3	Program Core Course	PCC-CS502	Database Management Systems	3	0	0	3	3
4	Program Core Course	PCC-CS503	Object Oriented Programming using Java	3	0	0	3	3
5	Professional Elective courses	PEC-CS-T-501	Advanced Algorithms	3	0		3	3
		PEC-CS-S-501	Advanced Computer Architecture					
		PEC-CS-D-501	Neural Networks and Deep Learning					
		PEC-CS-A-501	Artificial Intelligence					
B. PRACTICAL								
6	Program Core Course	PCC-CS591	Compiler Design Lab	0	0	3	3	1.5
7	Program Core Course	PCC-CS592	Database Management Systems Lab	0	0	3	3	1.5
8	Program Core Course	PCC-CS593	Object Oriented Programming using Java Lab	0	0	3	3	1.5
9	Professional Elective courses	PEC-CS-T-591	Advanced Algorithms Lab	0	0	3	3	1.5
		PEC-CS-S-591	Advanced Computer Architecture Lab					
		PEC-CS-D-591	Neural Networks and Deep Learning Lab					

		PEC-CS-A-591	Artificial Intelligence Lab					
10	PROJECT	PR 591	Minor Project I	0	0	3	2	1
11	PROJECT	PR 592	Skill Development V: Soft Skill & Aptitude-II	1	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 501	Constitution of India	3	0	0	3	3Units
	TOTAL CREDIT WITHOUT MOOCS COURSES							21.5
D. MOOCS COURSES**								
13	MOOCS COURSES	HM501	MOOCS COURSE-III	3	1	0	4	4
TOTAL CREDIT WITH MOOCS COURSES								**25.5**

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**** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET**

3rd Year 2nd Semester: 6th Semester

Sl. No.	Category	Course Code	Course Title	Hours per week				Credits
				L	T	P	Total	
A. THEORY								
1	Humanities and Social Sciences including Management courses	HSMC 604	Economics for Engineers	2	0	0	2	2
2	Program Core Course	PCC-CS601	Computer Neteworks	3	0	0	3	3
3	Program Core Course	PCC-CS602	Software Engineering	3	0	0	3	3
4	Professional Elective courses	PEC-CS-T-601	Microprocessor and Microcontroller	3	0	0	3	3
		PEC-CS-S-601	Advanced Operating Systems					
		PEC-CS-D-601	Machine Learning					
		PEC-CS-A-601	Web and Internet Technology					
5	Professional Elective courses	PEC-CS-T-602	Parallel and Distributed Algorithms	3	0	0	3	3
		PEC-CS-S-602	Embedded Systems					
		PEC-CS-D-602	Soft Computing					
		PEC-CS-A-602	Human Computer Interaction					
6	Open Elective courses	OEC-CS-601A	Introduction to Internet of Things	3	0	0	3	3
		OEC-CS-601B	Bio-informatics					
		OEC-CS-601C	Robotics					
B. PRACTICAL								
7	Program Core Course	PCC-CS691	Computer Networks Lab	0	0	3	3	1.5
8	Program Core Course	PCC-CS692	Software Engineering Lab	0	0	3	3	1.5

9	Professional Elective courses	PEC-CS-T-691	Microprocessor and Microcontroller Lab	0	0	3	3	1.5
		PEC-CS-S-691	Advanced Operating Systems Lab					
		PEC-CS-D-691	Machine Learning Lab					
		PEC-CS-A-691	Web and Internet Technology Lab					
10	PROJECT	PR 691	Minor Project II	0	0	3	2	1
11	PROJECT	PR 692	Skill Development VI: Soft Skill & Aptitude-III	1	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
12	MC	MC 601	Intellectual Property Right	3	0	0	3	3Units
	TOTAL CREDIT WITHOUT MOOCS COURSES							23.0
D.MOOCS COURSES**								
13	MOOCS COURSES	HM601	MOOCS COURSE-IV	3	1	0	4	4
TOTAL CREDIT WITH MOOCS COURSES								**27**

Collective Data from 3rd to 6th Semester (Summer/Winter Training during Semester Break & Internship should be done after 5th Semester or 6th Semester). All related certificates to be collected by the training/ internship coordinator(s).

**** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET**

4th Year 1st Semester: 7th Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	Professional Elective courses	PEC-CS-T-701	Information Theory and Coding	3	0	0	3	3
		PEC-CS-S-701	Ad-Hoc and Sensor Networks					
		PEC-CS-D-701	Data Mining and Data Warehouse					
		PEC-CS-A-701	Cloud Computing					
2	Professional Elective courses	PEC-CS-T-702	Quantum Computing	3	0	0	3	3
		PEC-CS-S-702	Mobile Computing					
		PEC-CS-D-702	Natural Language Processing					
		PEC-CS-A-702	Cryptography and Network Security					
3	Open Elective courses	OEC-CS-701A	High Performance Computing	3	0	0	3	3
		OEC-CS-701B	Image Processing					
		OEC-CS-701C	Optimization Techniques					
4	Open Elective courses	OEC-CS-702A	Cyber Law and Ethics	3	0	0	3	3
		OEC-CS-702B	Soft Skills and Interpersonal Communication					
		OEC-CS-702C	Foreign Language					
B. PRACTICAL								
5	Professional Elective courses	PEC-CS-T-791	Information Theory and Coding Lab	0	0	0	3	1.5
		PEC-CS-S-791	Ad-Hoc and Sensor Networks Lab					
		PEC-CS-D-791	Data Mining and Data Warehousing Lab					
		PEC-CS-A-791	Cloud Computing Lab					
6	Open Elective courses	OEC-CS-791A	High Performance Computing Lab	0	0	3	3	1.5
		OEC-CS-791B	Image Processing Lab					

		OEC-CS-791C	Optimization Techniques Lab					
7	PROJECT	PR 791	Major Project-I	0	0	0	4	2
8	PROJECT	PR 792*	Industrial Training / Internship	0	0	0	0	1
9	PROJECT	PR 793	Skill Development VII: Seminar & Group Discussion	1	0	0	1	0.5
C. MANDATORY ACTIVITIES / COURSES								
10	MC	MC 781	Entrepreneurship & Innovation Skill	3	0	0	3	3 Units
TOTAL CREDIT WITHOUT MOOCS COURSES								18.5
D.MOOCS COURSES**								
11	MOOCS COURSES	HM701	MOOCS COURSE-V	3	1	0	4	4
TOTAL CREDIT WITH MOOCS COURSES								**22.5**

Collective Data from 3rd to 6th Semester (Summer/Winter Training during Semester Break & Internship should be done after 5th Semester or 6th Semester). All related certificates to be collected by the training/ internship coordinator(s).

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4th Year 2nd Semester: 8th Semester								
Sl No	**Course Code**	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
				L	**T**	**P**	**Total**	
A. THEORY								
1	Professional Elective courses	PEC-CS-T-801	Advance Graph Algorithms	3	0	0	3	3
		PEC-CS-S-801	Real Time System					
		PEC-CS-D-801	Data Analytics					
		PEC-CS-A-801	Computer Graphics					
2	Open Elective courses	OEC-CS-801A	Human Resource Development and Organizational Behavior	3	0	0	3	3
		OEC-CS-801B	VLSI					
		OEC-CS-801C	Simulation and Modeling					
3	Open Elective courses	OEC-CS-802A	Values and Ethics in Profession	3	0	0	3	3
		OEC-CS-802B	History of Science					
		OEC-CS-802C	Economic Policies in India					
B. PRACTICAL								
4	PROJECT	PR 891	Major Project-II	0	0	0	12	6
5	PROJECT	PR 892	Grand Viva	0	0	0	0	1
C. MANDATORY ACTIVITIES / COURSES								
6	MC	MC 801	Essence of Indian Knowledge Tradition	0	0	3	3	3 Units
TOTAL CREDIT								16