

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SCHOOL OF ENGINEERING AND TECHNOLOGY

COURSE STRUCTURE - CSE(Batch 2020-24)												
B.Tech-COMPUTER SCIENCE AND ENGINEERING(IOT)												
I SEMESTER - CHEMISTRY CYCLE												
Sl. NO.	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total Credits	Honours Credits
				L	T	P		L	T	P		
1	MA131	BSC	Mathematics - I	3	0	0	100	3	0	0	3	
2	CH132P	BSC	Chemistry	3	0	2	100	3	0	1	4	
3	EC133P	ESC	Basic Electronics	3	0	2	100	3	0	1	4	
4	CS134P	ESC	Computer Programming	3	0	2	100	3	0	1	4	
5	ME135	ESC	Basic Mechanical Engineering and Nano science	3	0	0	100	3	0	0	3	
6	TE136P	HSMC	Technical English	1	0	2	50	1	0	1	2	
7	ME 151	BSC	Workshop Practice Lab	0	0	2	50	0	0	1	1	
8	HE171		Holistic Education-I	1	0	0	---	1	0	0	1	
			Total	17	0	10	600	17	0	5	22	0

I SEMESTER - PHYSICS CYCLE												
Sl. NO.	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total Credits	Honours Credits
				L	T	P		L	T	P		
1	MA131	BSC	Mathematics - I	3	0	0	100	3	0	0	3	
2	PH132P	BSC	Physics	3	0	2	100	3	0	1	4	
3	EE133P	ESC	Basic Electrical Engineering	3	0	2	100	3	0	1	4	

4	CE134P	ESC	Basics of Civil Engineering & Engineering Mechanics	3	0	2	100	3	0	1	4	
5	EG135P	ESC	Engineering Graphics	2	0	2	100	2	0	1	3	
6	BS136	BSC	Bio Science	2	0	0	50	2	0	0	2	
7	HE171		H o l i s t i c Education-I	1	0	0	---	1	0	0	1	
			Total	17	0	8	550	17	0	4	21	0

II SEMESTER - CHEMISTRY CYCLE												
Sl.N O.	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total Credits	Honours Credits
				L	T	P		L	T	P		
1	MA231	BSC	Mathematics - II	3	0	0	100	3	0	0	3	
2	CH232P	BSC	Chemistry	3	0	2	100	3	0	1	4	
3	EC233P	ESC	Basic Electronics	3	0	2	100	3	0	1	4	
4	CS234P	ESC	C o m p u t e r Programming	3	0	2	100	3	0	1	4	
5	ME235	ESC	Basic Mechanical Engineering and Nano science	3	0	0	100	3	0	0	3	
6	TE236P	HSMC	T e c h n i c a l English	2	0	0	50	2	0	0	2	
7	ME 251	BSC	W o r k s h o p Practice Lab	0	0	2	50	0	0	1	1	
8	HE171		H o l i s t i c Education-I	1	0	0	---	1	0	0	1	
			Total	18	0	8	600	18	0	4	22	0
II SEMESTER - PHYSICS CYCLE												

Sl.N O.	Course Code	Course Type	Course Name	Hours			Total Mark s	Credit s			Total Credi ts	Honou rs Credits
				L	T	P		L	T	P		
1	MA231	BSC	Mathematics - II	3	0	0	100	3	0	0	3	
2	PH232P	BSC	Physics	3	0	2	100	3	0	1	4	
3	EE233P	ESC	Basic Electrical Engineering	3	0	2	100	3	0	1	4	
4	CE234P	ESC	Basics of Civil Engineering & Engineering Mechanics	3	0	2	100	3	0	1	4	
5	EG235P	ESC	Engineering Graphics	2	0	2	100	2	0	1	3	
6	BS 236	BSC	Bio Science	2	0	0	50	2	0	0	2	
7	HE271		H o l i s t i c Education-II	1	0	0	---	1	0	0	1	
			Total	17	0	8	550	17	0	4	21	0

III SEMESTER												
Sl. NO.	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total Credits	Honours Credits
				L	T	P		L	T	P		
1	CS331P	PCC	Database Management Systems	3	0	2	100	3	0	1	4	
2	CS332P	PCC	Data Structures and Algorithms	3	0	2	100	3	0	1	4	
3	IOT331	PCC	Introduction to Sensors	3	0	0	100	3	0	0	3	
4	EC337	PCC	Digital Systems	3	0	0	100	3	0	0	3	
5	MA334	BSC	Discrete Mathematics	3	0	0	100	3	0	0	3	
6	MC321	MC	Cyber Security	2	0	0	50	0	0	0	0	
7	HS311	HSMC	Technical Writing	2	0	0	50	2	0	0	2	
8	HOL312		Holistic Education-III	1	0	0	---	1	0	0	1	
			Total	20	0	4	600	18	0	2	20	0

IV SEMESTER												
Sl. NO.	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total Credits	Honours Credits
				L	T	P		L	T	P		
1	CS431	PCC	Probability and Queuing Theory	3	0	0	100	3	0	0	3	
2	CS432P	PCC	Operating Systems	3	0	2	100	3	0	1	4	
3	CS433P	PCC	Programming Paradigm	3	0	2	100	3	0	1	4	

4	CS434	PCC	F o r m a l L a n g u a g e & A u t o m a t a T h e o r y	3	0	0	100	3	0	0	3	
5	CS435P	PCC	Computer Organization & Architecture	3	0	2	100	3	0	1	4	
6	AIML45 1	PCC	Python Laboratory	0	0	2	50	0	0	1	1	
7	HS436	HSMC	Professional Ethics	3	0	0	100	3	0	0	3	
8	MC422	MC	Environmental Science	2	0	0	50	0	0	0	0	
9	HOL411		H o l i s t i c E d u c a t i o n - I V	1	0	0	-	1	0	0	1	
			Total	2 1	0	6	650	18	0	4	23	0

V SEMESTER												
Sl. NO.	Course Code	Course Type	Course Name	Hours			Total Mark s	Credits			Tota l Cre dits	Honou rs Credits
				L	T	P		L	T	P		
1	CS531P	PCC	C o m p u t e r N e t w o r k s	3	0	2	100	3	0	1	4	
2	IOT532	PCC	Statistical Signal Processing	3	0	0	100	3	0	0	3	
3	CS533P	PCC	D e s i g n a n d A n a l y s i s o f A l g o r i t h m s	3	0	2	100	3	0	1	4	
4	CS541	PEC	P r o g r a m E l e c t i v e - 1	3	0	0	100	3	0	0	3	
5	CS561	OE	Open Elective - 1-(Global)	2	0	0	50	2	0	0	2	

6	CS512	HSMC	P r o j e c t Management & Finance	3	0	0	100	3	0	0	3	
7	CS581	PROJ	Internship - 1	0	0	2	50	0	0	1	1	
8	HOXX54 1	HONS	H o n o u r s Elective - I	3	0	2	-	3	0	1	-	4
			Total	17	0	6	600	17	0	3	20	4

VI SEMESTER												
Sl. NO.	Course Code	Cours e Type	Course Name	Hours			Total Mark s	Credits			Tota l Cre dits	Honou rs Credits
				L	T	P		L	T	P		
1	CS631P	PCC	I n t e r n e t o f Things	3	0	2	100	3	0	0	4	
2	CS632	PCC	Compiler Design	3	0	0	100	3	0	0	3	
3	IOT633P	PCC	Cryptography and Network Security	3	0	0	100	3	0	0	3	
4	CS662	OE	Open Elective -2(Global Elective)	3	0	0	100	3	0	0	3	
6	CS642	PEC	Program Elective - 2	3	0	0	100	3	0	0	3	
7	HOXX64 1	HONS	Honours Elective - II	3	0	2	-	3	0	1	-	4
8	HOXX64 2	HONS	Honours Elective - III	3	0	2	-	3	0	1	-	4
			Total	18	0	4	500	15	0	2	17	8

VII SEMESTER

Sl. NO	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total Credits	Honours Credits
				L	T	P		L	T	P		
1	CS743	PEC	Program Elective - 3	3	0	0	100	3	0	0	3	
2	CS744	PEC	Program Elective - 4	3	0	0	100	3	0	1	4	
3	IOT735	PCC	Introduction to AI	3	0	0	100	3	0	0	3	
5	IOT736	PCC	Wireless Networks	3	0	0	100	3	0	0	3	
6	CS781	PROJ	Internship - 2	0	0	2	50	0	0	1	1	
7	CS782	PROJ	Service Learning	0	0	4	50	0	0	2	2	
8	CS783	PROJ	Project Phase-I	0	0	6	100	0	0	3	3	
9	HOXX741	HONS	Honours Elective - IV	3	0	2	-	3	0	1	-	4
10	HOXX742	HONS	Honours Elective - V	3	0	2	-	3	0	1	-	4
			Total	12	0	12	600	12	0	6	18	8

VIII SEMESTER

Sl. NO	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total Credits	Honours Credits
				L	T	P		L	T	P		
1	CS845	PEC	Program Elective - 5	3	0	0	100	3	0	0	3	
2	CS846	PEC	Program Elective - 6	3	0	0	100	3	0	0	3	
3	CS881	PROJ	Project Phase-II	0	0	18	300	0	0	9	9	
4	MC823	MC	Constitution of India	2	0	0	100	0	0	0	0	

			Total	8	0	$\frac{1}{8}$	600	6	0	9	15	0
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CREDIT DETAILS	
Semester	B.Tech-CSE-AI.ML
I	22
II	21
III	20
IV	22
V	20
VI	17
VII	18
VIII	15
TOTAL CREDITS	155

OPEN ELECTIVE										
CS662-OPEN ELECTIVE - 2 (Global Elective)										
Sl. N O.	Course Code	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	CS66 2E01	Web Programming Concepts	2	0	2	100	2	0	1	3
2	CS66 2E02	Java Programming	2	0	2	100	2	0	1	3
3	CS66 2E03	Software Testing Techniques	2	0	2	100	2	0	1	3
4	CS66 2E04	Introduction to Cloud Computing	2	0	2	100	2	0	1	3
5	CS66 2E05	Introduction to Data Science	2	0	2	100	2	0	1	3
6	CS66 2E06	Data Structures	2	0	2	100	2	0	1	3

7	CS66 2E07	Python for Engineers	2	0	2	100	2	0	1	3
8	CS66 2E08	Machine learning	2	0	2	100	2	0	1	3
9	CS66 2E09	Service Oriented Architecture	2	0	2	100	2	0	1	3
CS763- OPEN ELECTIVE - 3										
1	CS76 3E01	Software Process and Project Management	3	0	0	100	3	0	0	3
2	CS76 3E02	Software Quality Management	3	0	0	100	3	0	0	3
3	CS76 3E03	Web Services and Service Oriented Architecture	3	0	0	100	3	0	0	3
4	CS76 3E04	Software Requirement Estimation	3	0	0	100	3	0	0	3
CS764-OPEN ELECTIVE - 4										
1	CS76 4E01	Pattern Recognition	3	0	0	100	3	0	0	3
2	CS76 4E02	Software Project Management	3	0	0	100	3	0	0	3
3	CS76 4E03	Natural Language Processing	3	0	0	100	3	0	0	3
4	CS76 4E04	Operational Research	3	0	0	100	3	0	0	3
5	CS76 4E05	Bio Informatics	3	0	0	100	3	0	0	3
6	CS76 4E06	Microprocesso r and micro controller	2	0	2	100	2	0	1	3
7	CS76 4E07	Digital Signal Processing	2	0	2	100	2	0	1	3

8	CS76 4E08	Software Testing	2	0	2	100	2	0	1	3
9	CS76 4E09	Information Retrieval	2	0	2	100	2	0	1	3
10	CS76 4E10	Software Coding Practices	2	0	2	100	2	0	1	3

PROGRAM ELECTIVE										
CS541- PROGRAM ELECTIVE - 1										
Sl.N O.	Cours e Code	Course Name	Hours			Tota l Mar ks	Credits			Total Credits
			L	T	P		L	T	P	
1	CS541 E01	Computer Graphics with Open GL	3	0	0	100	3	0	0	3
2	CS541 E02	Internet and web programm ing	3	0	0	100	3	0	0	3
3	CS541 E03	Foundation of web science	3	0	0	100	3	0	0	3
4	CS541 C	Group-I	3	0	0	100	3	0	0	3
5	IOT54 1E04	Semantic Web Application s	3	0	0	100	3	0	0	3
6	IOT54 1E05	Big Data Analytics	3	0	0	100	3	0	0	3
CS642- PROGRAM ELECTIVE - 2										
1	CS642 E01	Mobile Application Developme nt	3	0	0	100	3	0	0	3
2	CS642 E02	Real Time Systems*	3	0	0	100	3	0	0	3

3	CS642 E03	Advanced Databases	3	0	0	100	3	0	0	3
4	CS642 E04	Computer Oriented Numerical Analysis	3	0	0	100	3	0	0	3
5	CS642 E05	Object Oriented Analysis and Design	3	0	0	100	3	0	0	3
6	CS642 E06	System Software	3	0	0	100	3	0	0	3
7	CS642 E07	Data warehousin g and Data mining*	3	0	0	100	3	0	0	3
8	IT642 E01	Design patterns *	3	0	0	100	3	0	0	3
9	CS642 C	Group-II	3	0	0	100	3	0	0	3
CS642E07 - This course is open only for CSE students. IT642E01- This course is open only for IT students. CS642E02- Elective course for CSE(IoT) students										
CS743- PROGRAM ELECTIVE - 3										
1	CS743 E01	Unix System Programmi ng	3	0	0	100	3	0	0	3
2	CS743 E02	TCP/IP Design and Implementa tion	3	0	0	100	3	0	0	3
3	CS743 E03	Simulation and Modeling	3	0	0	100	3	0	0	3
4	CS743 C	Group-III	3	0	0	100	3	0	0	3
CS744- PROGRAM ELECTIVE - 4										
1	CS744 E01	Information Storage and Managemen t	3	0	0	100	3	0	0	3

2	CS744 E02	Data Base Administrat ion	3	0	0	100	3	0	0	3
3	CS744 E03	Network Storage Technologie s	3	0	0	100	3	0	0	3
4	CS744 E04	Network Administrat ion	3	0	0	100	3	0	0	3
5	CS744 E05	Research Methodolog y	3	0	0	100	3	0	0	3
CS845- PROGRAM ELECTIVE - 5										
1	CS845 E01	Quantum Computing	3	0	0	100	3	0	0	3
2	CS845 E02	Mobile Computing	3	0	0	100	3	0	0	3
3	CS845 E03	Parallel Computing	3	0	0	100	3	0	0	3
4	CS845 E04	Grid Computing	3	0	0	100	3	0	0	3
CS846- PROGRAM ELECTIVE - 6										
1	CS846 E01	Computer Aided Decision Support Systems	3	0	0	100	3	0	0	3
2	CS846 E02	Soft Computing	3	0	0	100	3	0	0	3
3	CS846 E03	Introduction to Robotics	3	0	0	100	3	0	0	3
4	CS846 E04	High Performanc e Computing	3	0	0	100	3	0	0	3
5	CS846 E05	Digital Image Processing	3	0	0	100	3	0	0	3
CS782-Service Learning										

1	CS782 E01	Free and Open Source Software	0	0	4	50	0	0	2	2
2	CS782 E02	Digital Security and Principles	0	0	4	50	0	0	2	2

EMPLOYABILITY ENHANCEMENT COURSES										
CS541C-GROUP-I										
Sl.NO.	Course Code	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	CS541 C01	Linux Certified Server Administration	0	0	2	-	0	0	1	1
2	CS541 C02	Oracle certified Database Administration	0	0	2	-	0	0	1	1
3	CS541 C03	Solaris Server Administration	0	0	2	-	0	0	1	1
4	CS541 C04	Data Absorption	0	0	2	-	0	0	1	1
5	CS541 C05	Virtualization	0	0	2	-	0	0	1	1
6	CS541 C06	Robotic process and Automation	0	0	2	-	0	0	1	1
7	CS541 C07	List of approved NPTEL / MOOC Courses of minimum 6 weeks duration.	0	0	2	-	0	0	1	1

8	CS541 C08	CISCO/ JAVA Fundament al/ NDG Linux/ Python/IOT	0	0	2	-	0	0	1	1
CS642C-GROUP-II										
1	CS742 C01	Design Thinking	0	0	2	-	0	0	1	1
2	CS642 C02	Scrum & Agile	0	0	2	-	0	0	1	1
3	CS642 C03	Lean Six Sigma	0	0	2	-	0	0	1	1
4	CS642 C04	Project Managemen t Tool	0	0	2	-	0	0	1	1
5	CS642 C05	Fog Computing	0	0	2	-	0	0	1	1
6	CS642 C06	Dew Computing	0	0	2	-	0	0	1	1
7	CS642 C07	Cognitive Computing	0	0	2	-	0	0	1	1
8	CS642 C08	List of approved NPTEL / MOOC Courses of minimum 6 weeks duration.	0	0	2	-	0	0	1	1
CS743C-GROUP-III										
1	CS743 C01	Server Side Programmi ng	0	0	2	-	0	0	1	1
2	CS743 C02	Client Side Programmi ng	0	0	2	-	0	0	1	1
3	CS743 C03	Web Designing	0	0	2	-	0	0	1	1
4	CS743 C04	Shell Programmi ng	0	0	2	-	0	0	1	1

5	CS743 C05	Semantic Web	0	0	2	-	0	0	1	1
6	CS743 C06	List of approved NPTEL / MOOC Courses of minimum 6 weeks duration.	0	0	2	-	0	0	1	1

HONOURSCOURSES

Honours in Artificial Intelligence

Sl.N O.	Course Code	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	HOAI 541	Statistical foundation for Artificial Intelligence	3	0	2	100	3	0	1	4
2	HOAI 641	Artificial Intelligence and Machine Learning	3	0	2	100	3	0	1	4
3	HOAI 642	Robotics and Process Automation	3	0	2	100	3	0	1	4
4	HOAI 741	Computer Vision	3	0	2	100	3	0	1	4
5	HOAI 742	AI Project / MOOC Courses/ Certificate Courses	3	0	2	100	3	0	1	4
Total			15	0	10	500	15	0	5	20

Honours in Data Analytics

Sl.N O.	Course Code	Course Name	Hours			Total Mar ks	Credits			Total Credits
			L	T	P		L	T	P	

1	HOD A541	Statistical foundation for Data Analytics	3	0	2	100	3	0	1	4
2	HOD A641	Big Data Analytics	3	0	2	100	3	0	1	4
3	HOD A642	Big Data Security Analytics	3	0	2	100	3	0	1	4
4	HOD A741	Web Analytics	3	0	2	100	3	0	1	4
5	HOD A742	DA Project / MOOC Courses/ Certificate Courses	3	0	2	100	3	0	1	4
		Total	15	0	10	500	15	0	5	20

Honours in Cyber Security

Sl.N O.	Cours e Code	Course Name	Hours			Tota l Mar ks	Credits			Total Credits
			L	T	P		L	T	P	
1	HOC S541	Probability and Random Process	3	0	2	100	3	0	1	4
2	HOC S641	Mobile and Network based Ethical Hacking	3	0	2	100	3	0	1	4
3	HOC S642	Cyber Forensics and Malware Detection	3	0	2	100	3	0	1	4
4	HOC S741	Intrusion detection and Incident Response	3	0	2	100	3	0	1	4

5	HOC S742	CS Project / MOOC Courses/ Certificate Courses	3	0	2	100	3	0	1	4
		Total	15	0	10	500	15	0	5	20

MINOR COURSES										
Minor in Computer Science and Engineering (offered by department of CSE for non- CSE/IT students)										
Sl.N O.	Course Code	Course Name	Hours			Total Mar ks	Credits			Total Credits
			L	T	P		L	T	P	
1	CS332 P	Data Structures and Algorithms	3	0	2	100	3	0	1	4
2	CS433 P	Programmi ng Paradigm	3	0	2	100	3	0	1	4
3	MICS 435P	Basics of Computer Architecture & Operating Systems	3	0	2	100	3	0	1	4
4	CS531 P	Computer Networks	3	0	2	100	3	0	1	4
5	MICS 534P	Database System	3	0	2	100	3	0	1	4
		Total	15	0	10	500	15	0	5	20