

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**SCHOOL OF ENGINEERING AND TECHNOLOGY**

<b>DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING</b>											
<b>COURSE STRUCTURE</b>											
<b>B.Tech Computer Science and Engineering- 2020 BATCH</b>											
<b>I SEMESTER - CHEMISTRY CYCLE</b>											
Sl. NO.	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total 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 Nanoscience	3	0	0	100	3	0	0	3
6	TE136P	HSM C	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
			<b>Total</b>	<b>17</b>	<b>0</b>	<b>10</b>	<b>600</b>	<b>17</b>	<b>0</b>	<b>5</b>	<b>22</b>
<b>I SEMESTER - PHYSICS CYCLE</b>											
Sl. NO.	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total 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		Holistic Education-I	1	0	0	---	1	0	0	1
			<b>Total</b>	<b>17</b>	<b>0</b>	<b>8</b>	<b>550</b>	<b>17</b>	<b>0</b>	<b>4</b>	<b>21</b>

### II SEMESTER - CHEMISTRY CYCLE

Sl.N O.	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total 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	Computer 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	HSM C	Technical English	2	0	0	50	2	0	0	2
7	ME 251	BSC	Workshop Practice Lab	0	0	2	50	0	0	1	1
8	HE171		Holistic Education-I	1	0	0	---	1	0	0	1
			<b>Total</b>	<b>18</b>	<b>0</b>	<b>8</b>	<b>600</b>	<b>18</b>	<b>0</b>	<b>4</b>	<b>22</b>

### II SEMESTER - PHYSICS CYCLE

Sl.N O.	Course Code	Course Type	Course Name	Hours			Total Marks	Credits			Total 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		Holistic Education-II	1	0	0	---	1	0	0	1
			<b>Total</b>	<b>17</b>	<b>0</b>	<b>8</b>	<b>550</b>	<b>17</b>	<b>0</b>	<b>4</b>	<b>21</b>

III SEMESTER											
Sl. No	Course Code	Course Type	Course Name	Hours			Total	Credits			Total
				L	T	P	Marks	L	T	P	Credits
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	CS333	PCC	Software Engineering	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	HSM C	Technical Writing	2	0	0	50	2	0	0	2
8	HOL312		Holistic Education-III	1	0	0	---	1	0	0	1
<b>Total</b>				<b>20</b>	<b>0</b>	<b>4</b>	<b>600</b>	<b>18</b>	<b>0</b>	<b>2</b>	<b>20</b>

IV SEMESTER											
Sl. No	Course Code	Course Type	Course Name	Hours			Total	Credits			Total
				L	T	P	Marks	L	T	P	Credits
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	Formal Language & Automata Theory	3	0	0	100	3	0	0	3
5	CS435P	PCC	Computer Organization & Architecture	3	0	2	100	3	0	1	4
6	BS451	BSC	Bio Science Laboratory	0	0	2	50	0	0	1	1
7	HS436	HSM C	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		Holistic Education-IV	1	0	0	-	1	0	0	1
<b>Total</b>				<b>22</b>	<b>0</b>	<b>6</b>	<b>700</b>	<b>20</b>	<b>0</b>	<b>3</b>	<b>23</b>

V SEMESTER											
Sl. No	Course Code	Course Type	Course Name	Hours			Total	Credits			Total
				L	T	P	Marks	L	T	P	Credits
1	CS531P	PCC	Computer Networks	3	0	2	100	3	0	1	4
2	CS532	PCC	Introduction to Artificial Intelligence	3	0	0	100	3	0	0	3
3	CS533P	PCC	Design and Analysis of Algorithms	3	0	2	100	3	0	1	4
4	CS541	PEC	Program Elective - 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	HSM C	Project Management & Finance	3	0	0	100	3	0	0	3
7	CS581	PROJ	Internship - 1	0	0	2	50	0	0	1	1
<b>Total</b>				<b>17</b>	<b>0</b>	<b>6</b>	<b>600</b>	<b>17</b>	<b>0</b>	<b>3</b>	<b>20</b>

VI SEMESTER											
Sl. No	Course Code	Course Type	Course Name	Hours			Total	Credits			Total
				L	T	P	Marks	L	T	P	Credits
1	CS631P	PCC	Internet of Things	3	0	2	100	3	0	1	4
2	CS632	PCC	Compiler Design	3	0	0	100	3	0	0	3
3	CS633P	PCC	Design patterns	3	0	2	100	3	0	1	4
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
<b>Total</b>				<b>18</b>	<b>0</b>	<b>4</b>	<b>500</b>	<b>15</b>	<b>0</b>	<b>2</b>	<b>17</b>

VII SEMESTER											
Sl. No	Course Code	Course Type	Course Name	Hours			Total	Credits			Total
				L	T	P	Marks	L	T	P	Credits
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	0	3
3	CS763	PEC	Open Elective - 3	3	0	0	100	3	0	0	3
5	CS764	OE	Open Elective - 4	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	4	100	0	0	2	2
<b>Total</b>				<b>12</b>	<b>0</b>	<b>12</b>	<b>600</b>	<b>12</b>	<b>0</b>	<b>5</b>	<b>17</b>

### VIII SEMESTER

Sl. No	Course Code	Course Type	Course Name	Hours			Total	Credits			Total
				L	T	P	Mark s	L	T	P	Credi ts
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
<b>Total</b>				<b>8</b>	<b>0</b>	<b>18</b>	<b>600</b>	<b>6</b>	<b>0</b>	<b>9</b>	<b>15</b>

### OPEN ELECTIVE

#### CS662-OPEN ELECTIVE – 2 ( Global Elective)

1	CS662E01		Web Programming Concepts	2	0	2	100	2	0	1	3
2	CS662E02		Java Programming	2	0	2	100	2	0	1	3
3	CS662E03		Software Testing Techniques	2	0	2	100	2	0	1	3
4	CS662E04		Introduction to Cloud Computing	2	0	2	100	2	0	1	3
5	CS662E05		Introduction to Data Science	2	0	2	100	2	0	1	3
6	CS662E06		Data Structures	2	0	2	100	2	0	1	3
7	CS662E07		Python for Engineers	2	0	2	100	2	0	1	3
8	CS662E08		Machine learning	2	0	2	100	2	0	1	3

9	CS662E0 9		Cryptography and Network security	2	0	2	100	2	0	1	3
10	CS662E1 0		Service Oriented Architecture	2	0	2	100	2	0	1	3
<b>CS763- OPEN ELECTIVE - 3</b>											
1	CS763E0 1		Software Process and Project Management	3	0	0	100	3	0	0	3
2	CS763E0 2		Software Quality Management	3	0	0	100	3	0	0	3
3	CS763E0 3		Web Services and Service Oriented Architecture	3	0	0	100	3	0	0	3
4	CS763E0 4		Software Requirement Estimation	3	0	0	100	3	0	0	3
<b>CS764-OPEN ELECTIVE - 4</b>											
1	CS764E0 1		Pattern Recognition	3	0	0	100	3	0	0	3
2	CS764E0 2		Wireless Networks	3	0	0	100	3	0	0	3
3	CS764E0 3		Software Project Management	3	0	0	100	3	0	0	3
4	CS764E0 4		Natural Language Processing	3	0	0	100	3	0	0	3
5	CS764E0 5		Operational Research	3	0	0	100	3	0	0	3
6	CS764E0 6		Bio Informatics	3	0	0	100	3	0	0	3
7	CS764E0 7		Microprocessor and micro controller	2	0	2	100	2	0	1	3
8	CS764E0 8		Digital Signal Processing	2	0	2	100	2	0	1	3
9	CS764E0 9		Software Testing	2	0	2	100	2	0	1	3
10	CS764E1 0		Information Retrieval	2	0	2	100	2	0	1	3
11	CS764E1 1		Software Coding Practices	2	0	2	100	2	0	1	3

<b>PROGRAM ELECTIVE</b>											
<b>CS541- PROGRAM ELECTIVE – 1</b>											

1	CS541E0 1		Computer Graphics with Open GL	3	0	0	100	3	0	0	3
2	CS541E0 2		Internet and web programming	3	0	0	100	3	0	0	3
3	CS541E0 3		Foundation of web science	3	0	0	100	3	0	0	3
4	CS541C		Group-I	3	0	0	100	3	0	0	3
<b>CS642- PROGRAM ELECTIVE - 2</b>											
1	CS642E0 1		Mobile Application Development	3	0	0	100	3	0	0	3
2	CS642E0 2		Real Time Systems	3	0	0	100	3	0	0	3
3	CS642E0 3		Advanced Databases	3	0	0	100	3	0	0	3
4	CS642E0 4		Computer Oriented Numerical Analysis	3	0	0	100	3	0	0	3
5	CS642E0 5		Object Oriented Analysis and Design	3	0	0	100	3	0	0	3
6	CS642E0 6		System Software	3	0	0	100	3	0	0	3
7	CS642E0 7		Data warehousing and Data mining*	3	0	0	100	3	0	0	3
8	IT642E0 1		Design patterns *	3	0	0	100	3	0	0	3
9	CS642C		Group-II	3	0	0	100	3	0	0	3
<b>CS642E07 - This course is open only for CSE students.</b>											
<b>IT642E01- This course is open only for IT students.</b>											
<b>CS743- PROGRAM ELECTIVE - 3</b>											
1	CS743E0 1		Unix System Programming	3	0	0	100	3	0	0	3
2	CS743E0 2		TCP/IP Design and Implementation	3	0	0	100	3	0	0	3
3	CS743E0 3		Simulation and Modeling	3	0	0	100	3	0	0	3
4	CS743C		Group-III	3	0	0	100	3	0	0	3
<b>CS744- PROGRAM ELECTIVE - 4</b>											

1	CS744E0 1	Information Storage and Management	3	0	0	100	3	0	0	3
2	CS744E0 2	Data Base Administration	3	0	0	100	3	0	0	3
3	CS744E0 3	Network Storage Technologies	3	0	0	100	3	0	0	3
4	CS744E0 4	Network Administration	3	0	0	100	3	0	0	3
5	CS744E0 5	Research Methodology	3	0	0	100	3	0	0	3
<b>CS845- PROGRAM ELECTIVE - 5</b>										
1	CS845E0 1	Quantum Computing	3	0	0	100	3	0	0	3
2	CS845E0 2	Mobile Computing	3	0	0	100	3	0	0	3
3	CS845E0 3	Parallel Computing	3	0	0	100	3	0	0	3
4	CS845E0 4	Grid Computing	3	0	0	100	3	0	0	3
5	CS845E0 5	Introduction to Data mining	3	0	0	100	3	0	0	3
<b>CS846- PROGRAM ELECTIVE - 6</b>										
1	CS846E0 1	Computer Aided Decision Support Systems	3	0	0	100	3	0	0	3
2	CS846E0 2	Soft Computing	3	0	0	100	3	0	0	3
3	CS846E0 3	Introduction to Robotics	3	0	0	100	3	0	0	3
4	CS846E0 4	High Performance Computing	3	0	0	100	3	0	0	3
5	CS846E0 5	Digital Image Processing	3	0	0	100	3	0	0	3
<b>CS782-Service Learning</b>										
1	CS782E0 1	Free and Open Source Software	0	0	4	50	0	0	2	2
2	CS782E0 2	Digital Security and Principles	0	0	4	50	0	0	2	2



EMPLOYABILITY ENHANCEMENT COURSES											
CS541C-GROUP-I											
1	CS541C 01		Linux Certified Server Administration	0	0	2	-	0	0	1	1
2	CS541C 02		Oracle certified Database Administration	0	0	2	-	0	0	1	1
3	CS541C 03		Solaris Server Administration	0	0	2	-	0	0	1	1
4	CS541C 04		Data Absorption	0	0	2	-	0	0	1	1
5	CS541C 05		Virtualization	0	0	2	-	0	0	1	1
6	CS541C 06		Robotic process and Automation	0	0	2	-	0	0	1	1
7	CS541C 07		List of approved NPTEL / MOOC Courses of minimum 6 weeks duration.	0	0	2	-	0	0	1	1
8	CS541C 08		C I S C O / J A V A Fundamental/ NDG Linux/ Python/IOT	0	0	2	-	0	0	1	1
CS642C-GROUP-II											
1	CS642C 01		Design Thinking	0	0	2	-	0	0	1	1
2	CS642C 02		Scrum & Agile	0	0	2	-	0	0	1	1
3	CS642C 03		Lean Six Sigma	0	0	2	-	0	0	1	1
4	CS642C 04		Project Management Tool	0	0	2	-	0	0	1	1
5	CS642C 05		Fog Computing	0	0	2	-	0	0	1	1
6	CS642C 06		Dew Computing	0	0	2	-	0	0	1	1
7	CS642C 07		Cognitive Computing	0	0	2	-	0	0	1	1
8	CS642C 08		List of approved NPTEL / MOOC Courses of minimum 6 weeks duration.	0	0	2	-	0	0	1	1
CS743C-GROUP-III											

1	CS743C 01		Server Side Programming	0	0	2	-	0	0	1	1
2	CS743C 02		Client Side Programming	0	0	2	-	0	0	1	1
3	CS743C 03		Web Designing	0	0	2	-	0	0	1	1
4	CS743C 04		Shell Programming	0	0	2	-	0	0	1	1
5	CS743C 05		Semantic Web	0	0	2	-	0	0	1	1
6	CS743C 06		List of approved NPTEL / MOOC Courses of minimum 6 weeks duration.	0	0	2	-	0	0	1	1

#### HONOURSCOURSES

##### Honours in Artificial Intelligence

1	HOAI54 1		Statistical foundation for Artificial Intelligence	3	0	2	100	3	0	1	4
2	HOAI64 1		Artificial Intelligence and Machine Learning	3	0	2	100	3	0	1	4
3	HOAI64 2		Robotics and Process Automation	3	0	2	100	3	0	1	4
4	HOAI74 1		Computer Vision	3	0	2	100	3	0	1	4
5	HOAI74 2		AI Project / MOOC Courses/ Certificate Courses	3	0	2	100	3	0	1	4
			<b>Total</b>	<b>15</b>	<b>0</b>	<b>10</b>	<b>500</b>	<b>15</b>	<b>0</b>	<b>5</b>	<b>20</b>

##### Honours in Data Analytics

1	HOAI54 1		Statistical foundation for Data Analytics	3	0	2	100	3	0	1	4
2	HODA6 41		Big Data Analytics	3	0	2	100	3	0	1	4
3	HODA6 42		Big Data Security Analytics	3	0	2	100	3	0	1	4
4	HODA7 41		Web Analytics	3	0	2	100	3	0	1	4

5	HODA7 42		DA Project / MOOC Courses/ Certificate Courses	3	0	2	100	3	0	1	4
			<b>Total</b>	<b>15</b>	<b>0</b>	<b>10</b>	<b>500</b>	<b>15</b>	<b>0</b>	<b>5</b>	<b>20</b>
<b>Honours in Cyber Security</b>											
1	HOCS54 1		Probability and Random Process	3	0	2	100	3	0	1	4
2	HOCS64 1		Mobile and Network based Ethical Hacking	3	0	2	100	3	0	1	4
3	HOCS64 2		Cyber Forensics and Malware Detection	3	0	2	100	3	0	1	4
4	HOCS74 1		Intrusion detection and Incident Response	3	0	2	100	3	0	1	4
5	HOCS74 2		CS Project / MOOC Courses/ Certificate Courses	3	0	2	100	3	0	1	4
			<b>Total</b>	<b>15</b>	<b>0</b>	<b>10</b>	<b>500</b>	<b>15</b>	<b>0</b>	<b>5</b>	<b>20</b>
MINOR COURSES											
<b>Minor in Computer Science and Engineering (offered by department of CSE for non- CSE/IT students)</b>											
1	CS332P		Data Structures and Algorithms	3	0	2	100	3	0	1	4
2	CS433P		Programming Paradigm	3	0	2	100	3	0	1	4
3	MICS43 5P		Basics of Computer Architecture & Operating Systems	3	0	2	100	3	0	1	4
4	CS531P		Computer Networks	3	0	2	100	3	0	1	4
5	MICS53 4P		Database System	3	0	2	100	3	0	1	4
			<b>Total</b>	<b>15</b>	<b>0</b>	<b>10</b>	<b>500</b>	<b>15</b>	<b>0</b>	<b>5</b>	<b>20</b>

<b>LIST OF THE MINOR PROGRAMMES OFFERED BY OTHER DEPARTMENTS</b>				
		<b>S I NO.</b>	<b>TITLE OF THE MINOR PROGRAMME</b>	<b>OFFERING DEPARTMENT</b>
		1	Architecture	School of Architecture
		2	Automation	Department of Mechanical and Automobile
		3	Business Accounting	Department of Commerce

		4	Computer Science	Department of Computer Science
		5	E-Mobility	Department of Electrical and Electronics
		6	Management	Department of Business Studies and Social Sciences
		7	Psychology	Department of Psychology
		8	Internet of Things	Department of Electronics and Communication