

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**SCHOOL OF ENGINEERING AND TECHNOLOGY**

<b>COURSE STRUCTURE - CSE( Batch 2020-24)</b>												
<b>B.Tech-COMPUTER SCIENCE AND ENGINEERING(AI-ML)</b>												
<b>I SEMESTER - CHEMISTRY CYCLE</b>												
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	
			<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>0</b>

<b>I SEMESTER - PHYSICS CYCLE</b>												
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	
			<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>	<b>0</b>

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	
			<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>	<b>0</b>
<b>II SEMESTER - PHYSICS CYCLE</b>												

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	
			<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>	<b>0</b>

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	AIML331	PCC	Introduction to AI	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	
			<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>	<b>0</b>

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	
			<b>Total</b>	<b>21</b>	<b>0</b>	<b>6</b>	<b>650</b>	<b>18</b>	<b>0</b>	<b>4</b>	<b>23</b>	<b>0</b>

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	AIML53 2	PCC	I n t r o d u c t i o n t o M a c h i n e L e a r n i n g	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	O p e n E l e c t i v e - 1-(G l o b a l)	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
			<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>	<b>4</b>

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	AIML63 3	PCC	Digital Image Processing	3	0	2	100	3	0	0	4	
2	CS632	PCC	Compiler Design	3	0	0	100	3	0	0	3	
3	AIML63 4	PCC	Soft Computing	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
			<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>	<b>8</b>

<b>VII SEMESTER</b>
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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	AIML735	PCC	Neural Network	3	0	2	100	3	0	1	4	
3	AIML736	PCC	Pattern Recognition	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	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
			<b>Total</b>	<b>12</b>	<b>0</b>	<b>12</b>	<b>600</b>	<b>12</b>	<b>0</b>	<b>6</b>	<b>19</b>	<b>8</b>

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	

			<b>Total</b>	8	0	$\frac{1}{8}$	600	6	0	9	15	0
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<b>CREDIT DETAILS</b>	
<b>Se mes ter</b>	<b>B.Tech- CSE- AI.ML</b>
I	22
II	21
III	20
IV	22
V	20
VI	17
VII	18
VIII	15
<b>TO TA L CR EDI TS</b>	<b>155</b>

<b>CS561-OPEN ELECTIVE - 1</b>	
<b>SUBJECT</b>	<b>DEPARTMENT</b>
DANCE COURSE	Department of Theatre and Performing Arts
THEATRE DIRECTION	Department of Theatre and Performing Arts
THEATRE PLAY	Department of Theatre and Performing Arts
VOICE IMPROVEMENT / VOCAL THERAPY	Department of Music
DIGITAL WRITING	Department of Media Studies
DIGITAL MEDIA	Department of Media Studies
INTELLECTUAL PROPERTY RIGHTS	School of Law
PROFESSIONAL PSYCHOLOGY	Department of Psychology

ORGANISATION BEHAVIOUR	Department of Social Work
CORPORATE SOCIAL RESPONSIBILITY	Department of Social Work
SOCIAL WELFARE ADMINISTRATION	Department of Social Work
CREATIVITY AND INNOVATION	Centre for Digital Innovation
LANGUAGES - FRENCH	Department of languages
GERMAN	Department of languages
JAPANESE	Department of languages
KOREAN	Department of languages
ASIAN CUISINE	Department of Hotel Management
IMAGINEERING	Department of Hotel Management
DIGITAL MARKETING	Institute of Management
DATA ANALYTICS THROUGH SPSS	Institute of Management
SELLING WITH EMOTIONAL INTELLIGENCE	Institute of Management
LEARNING THROUGH CASE STUDY	Institute of Management

OPEN ELECTIVE

CS662-OPEN ELECTIVE - 2 ( Global Elective)

Sl. NO	Course Code	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	CS662 E01	Web Programming Concepts	2	0	2	100	2	0	1	3
2	CS662 E02	Java Programming	2	0	2	100	2	0	1	3
3	CS662 E03	Software Testing Techniques	2	0	2	100	2	0	1	3
4	CS662 E04	Introduction to Cloud Computing	2	0	2	100	2	0	1	3
5	CS662 E05	Introduction to Data Science	2	0	2	100	2	0	1	3
6	CS662 E06	Data Structures	2	0	2	100	2	0	1	3
7	CS662 E07	Python for Engineers	2	0	2	100	2	0	1	3
8	CS662 E08	Advanced Machine learning *	2	0	2	100	2	0	1	3



		CS764E04 is Compulsory Elective for CSE(AI & ML) students										
PROGRAM ELECTIVE												
CS541- PROGRAM ELECTIVE - 1												
Sl. NO	Course Code	Course Name	Hours			Total Marks	Credit s			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 programming	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		
CS642- PROGRAM ELECTIVE - 2												
1	CS642 E01	Mobile Application Development	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 warehousing and Data mining*	3	0	0	100	3	0	0	3		
8	IT642E 01	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.										
CS743- PROGRAM ELECTIVE - 3										
1	CS743 E01	Unix System Programming	3	0	0	100	3	0	0	3
2	CS743 E02	TCP/IP Design and Implementation	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 Management	3	0	0	100	3	0	0	3
2	CS744 E02	Data Base Administration	3	0	0	100	3	0	0	3
3	CS744 E03	Network Storage Technologies	3	0	0	100	3	0	0	3
4	CS744 E04	Network Administration	3	0	0	100	3	0	0	3
5	CS744 E05	Research Methodology	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
5	CS845 E05	Introduction to Data mining	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	AIML8 46E02	Fuzzy Systems	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 Performance 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

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	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
		Total	1 5	0	1 0	500	1 5	0	5	20
Honours in Data Analytics										
Sl.N O.	Course Code	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
1	HODA5 41	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
		Total	1 5	0	1 0	500	1 5	0	5	20

### Honours in Cyber Security

Sl.N O.	Course Code	Course Name	Hours			Total Marks	Credits			Total Credits
			L	T	P		L	T	P	
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
		Total	1 5	0	1 0	500	1 5	0	5	20