

**B.Tech./B.Tech. (HON)/Dual Degree (B.Tech-M.S.) COURSE STRUCTURE  
COMPUTER SCIENCE AND ENGINEERING WITH SPECIALIZATION IN AI & DATA SCIENCE**

Semester –I					Semester -II						
Course	Course Name	L	T	P	C	Course	Course Name	L	T	P	C
IMA111	Discrete Mathematics	3	1	0	4	IMA121	Calculus and Linear Algebra	3	1	0	4
ICS111	IT Workshop I	3	1	2	5	IEC121	Digital Design and Electric Circuits	3	1	2	5
ICS112	Computer Programming	3	1	2	5	ICS121	Data Structures I	3	1	2	5
IEC111	Electronic Circuits	3	1	2	5	ICS122	Computer Organization	3	1	0	4
IHS111	Communication Skills	3	0	0	3	ICS123	IT Workshop II	2	1	2	4
IHS112	Foreign Language	1	0	0	1	IHS121	Personality Development	1	0	0	1
IPT111	Physical Training I	0	0	2	0						
<b>Total</b>		<b>16</b>	<b>4</b>	<b>8</b>	<b>23</b>	<b>Total</b>		<b>15</b>	<b>5</b>	<b>6</b>	<b>23</b>
Cumulative Credits at the End of First Year: 46											
Semester –III					Semester -IV						
Course	Course Name	L	T	P	C	Course	Course Name	L	T	P	C
IMA211	Probability, Statistics and Random Processes	3	1	0	4	ICS221	Theory of Computation	3	1	0	4
ICS211	Design and Analysis of Algorithms	3	1	0	4	ICS222	Object-Oriented Analysis and Design	3	0	2	4
ICS212	Operating Systems	3	1	0	4	ICS223	Compiler Design	3	0	2	4
ICS213	Database Management Systems	2	1	2	4	ICS224	Computer Networks	3	0	2	4
ICS214	IT Workshop III	2	1	2	4	IMA221	Differential Equations and Transforms	3	1	0	4
ISC213	Introduction to Cognitive Science	2	0	0	2	IHS221	Fundamentals of Economics	1	0	0	1
ICS215	Data Structures II	1	0	2	2	IHS222	Principles of Management	1	0	0	1
IPT211	Physical Training II	0	0	2	0	ICS225	Data Structures III	1	0	2	2
<b>Total</b>		<b>16</b>	<b>5</b>	<b>8</b>	<b>24</b>	<b>Total</b>		<b>18</b>	<b>2</b>	<b>8</b>	<b>24</b>
Cumulative Credits at the End of Second Year: 94											
Semester –V					Semester -VI						
Course	Course Name	L	T	P	C	Course	Course Name	L	T	P	C
CSE311	Artificial Intelligence	3	0	2	4	CSE321	Microprocessors	3	0	2	4
CSE312	Software Engineering and Project Management	3	0	2	4	CSE322	Cloud Computing	3	0	2	4
ICS311/ ADSXXX	Parallel and Distributed Computing / Cyber physical systems and IoT	3	0	2	4	ICS321	Data Warehousing & Data Mining	3	0	2	4
IEC311	Digital Signal Processing	3	0	2	4	ICS322	Machine Learning	3	0	0	3
IMAXXX	Optimization techniques for Data Science/ Linear Algebra for Data Science	3	0	0	3	ISCXXX	Introduction to Network Science / Network Science Analytics	3	0	0	3
IHS311	Human Resource Management	1	0	0	1	IOEXXX	Introduction to DevOps and microservices	3	0	0	3
IHS312	Financial Management and Accounting	1	0	0	1	ADS321	Honours Project I (Optional) I				
IHS313	Operations and Supply Chain Management	1	0	0	1						
<b>Total</b>		<b>18</b>	<b>0</b>	<b>8</b>	<b>22</b>	<b>Total</b>		<b>18</b>	<b>0</b>	<b>6</b>	<b>21</b>
Cumulative Credits at the End of Third Year: 137											
Semester –VII					Semester -VIII						
Course	Course Name	L	T	P	C	Course	Course Name	L	T	P	C
CSE411	Computer Graphics	3	0	2	4	ICS 422/ ICSXXX	Applied Predictive Analytics / Computer Systems for Machine Learning/ Scientific Machine Learning/ Time Series Analytics	3	0	0	3
CSEXXX	Speech and Natural Language Processing/ Computer Vision: Principles and Process	3	0	2	4	ADSXXX	Machine Learning Operations (MLOps)/ Graph Analytics for big data	3	0	2	4
ICS412	Cryptography and Network Security	3	0	2	4	IOE421	Deep Learning	3	0	0	3
IOEXXX	Data handling analysis and visualization/ Streaming data analytics/ Dependable and secure AI/ Pattern recognition/Streaming data analytics	3	0	0	3	ADS421	BTP - II	6	0	0	6
ADS411	BTP - I	6	0	0	6	ADS424	Honours Project II (Optional)				
ADSXXX	Research Course (Optional)					ADSXXX	Research Course (Optional)				
<b>Total</b>		<b>18</b>	<b>0</b>	<b>6</b>	<b>21</b>	<b>Total</b>		<b>15</b>	<b>0</b>	<b>2</b>	<b>16</b>
Cumulative Credits at the End of Fourth Year: 174( BTech); 174+ 12=186( BTech(Hon)); 174+20= 194( BTech- MS)											
Semester –IX					Semester -X						
Course	Course Name	L	T	P	C	Course	Course Name	L	T	P	C
ADS 511	Research Project	12	0	0	12	ADS 521	Research Project	12	0	0	12
<b>Total</b>		<b>12</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>Total</b>		<b>12</b>	<b>0</b>	<b>0</b>	<b>12</b>
Cumulative Credits at the End of Fifth Year: 218 (BTech-MS)											

**Remark:** To meet the minimum requirement of 186 credits for qualifying the BTech (Hon) Degree, students may take two additional projects of 6 credits each and, to meet the requirement of 218 credits for BTech-MS, students may take two additional projects of 6 credits each, two 4 credit research courses and 24 credit research project in addition to 174 credits requirement of BTech Degree.