

**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
IMA 111	Discrete Mathematics	3	1	0	4	IMA 121	Calculus and Linear Algebra	3	1	0	4
ICS 111	IT Workshop I	3	1	3	5	IEC 121	Digital Design and Electric Circuits	3	1	3	5
ICS 112	Computer Programming	3	1	3	5	ICS 121	Data Structures I	3	1	3	5
IEC 111	Electronic Circuits and Measurements	3	1	3	5	ICS 122	Computer Organization	3	1	0	4
IHS 111	Communication Skills	3	0	0	3	ICS 123	IT Workshop II	2	1	3	4
IHS 112	Foreign Language	1	0	0	1	IHS 121	Personality Development	1	0	0	1
IPT 111	Physical Training I	0	0	2	0						
Total		16	4	11	23	Total		15	5	9	23

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
IMA 211	Probability, Statistics and Random Processes	3	1	0	4	ICS 221	Theory of Computation	3	1	0	4
ICS 211	Design and Analysis of Algorithms	3	1	0	4	ICS 222	OOAD	3	0	3	4
ICS 212	Operating Systems	3	1	0	4	ICS 223	Compiler Design	3	0	3	4
ICS 213	Databases Management Systems	2	1	3	4	ICS 224	Computer Networks	3	0	3	4
ICS 214	IT Workshop III	2	1	3	4	IMA221	Differential Equations and Transforms	3	1	0	4
ISC 212	Introduction to Cognitive Science	2	0	0	2	IHS 221	Fundamentals of Economics	1	0	0	1
ICS 215	Data Structures II	1	0	3	2	IHS 222	Principles of Management	1	0	0	1
IPT 211	Physical Training II	0	0	2	0	ICS 225	Data Structures III	1	0	3	2
<b>Total</b>		<b>16</b>	<b>5</b>	<b>11</b>	<b>24</b>	<b>Total</b>		<b>18</b>	<b>2</b>	<b>12</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
CSE 311	Artificial Intelligence	3	0	3	4		CSE 321	Microprocessors	3	0	3	4
CSE 312	Software Engineering and Project Management	3	0	3	4		CSE 322	Cloud Computing	3	0	3	4
ICS 311/ ADS xxx	Parallel and Distributed Computing / Cyberphysical systems and IoT	3	0	3	4		ICS 321	Data Warehousing & Data Mining	3	0	3	4
IEC 311	Digital Signal Processing	3	0	3	4		ICS 322	Machine Learning	3	0	0	3
IMA xxx	Optimization techniques for Data Science/ Linear Algebra for Data Science	3	0	0	3		ISC xxx	Introduction to Network Science / Network Science Analytics	3	0	0	3
IHS 311	Human Resource Management	1	0	0	1		IOE xxx	Introduction to DevOps and microservices	3	0	0	3
IHS 312	Financial Management & Accounting	1	0	0	1		ADS 321	Honours Project I (Optional) I				
HIS 313	Operations and Supply Chain Management	1	0	0	1							
<b>Total</b>		<b>18</b>	<b>0</b>	<b>12</b>	<b>22</b>		<b>Total</b>		<b>18</b>	<b>0</b>	<b>9</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
CSE 411	Computer Graphics	3	0	3	4		ICS 422/ ICS xxx	Applied Predictive Analytics / Computer Systems for Machine Learning/ Scientific Machine Learning/ Time Series Analytics	3	0	0	3
CSE xxx	Speech and Natural Language Processing/ Computer Vision: Principles and Process	3	0	3	4		ADS xxx	Machine Learning Operations (MLOps)/ Graph Analytics for big data	3	0	3	4
ICS 412	Cryptography and Network Security	3	0	3	4		IOE 421	Deep Learning	3	0	0	3
IOE xxx	Data handling analysis and visualization/ Streaming data analytics/ Dependable and secure AI/ Pattern recognition/Streaming data analytics	3	0	0	3		ADS 421	BTP - II	6	0	0	6
ADS 411	BTP - I	6	0	0	6		ADS 424	Honours Project II (Optional)				
ADS XXX	Research Course(Optional)						ADSXXX	Research Course(Optional)				
Total		18	0	9	21		Total		15	0	3	16

Cumulative Credits at the End of Fourth Year: 174( BTech); 174+ 12=186( BTech(Hon)); 174+20= 194( BTech- MS) MMS)

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.