

B. Tech. In Computer Science & Engineering

Specialization: Data Science (Batch 25-29)



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Faculty of Engineering and Technology

B.Tech. CSE (Specialization in Data Science)					
BRIDGE COURSE					
TBR101	IT-Primer	3	0	0	3
TBR102	Programming logic and Programming in C	2	0	1	3
Course code	Semesrer – 1	L	T	P	Cr
Major Courses					
TEE101	Basic Electrical and Electronics Engineering	3	0	1	4
TCS103	Python Programming	2	0	0	2
TCS104	Python Lab.	0	0	1	1
TAI105	AI Appetizer	2	0	0	2
Minor course					
TMN101	Enterpenureship Development	3	0	0	3
TMN102	Enterprise Development Lab.	0	0	1	1
Multidisciplinary Courses					
MAT105	Applied Mathematics	2	0	1	3
PHY109	Engineering Physics	2	0	1	3
Ability Enhancement course					
TAE101	Experimental soft competency-I	0	0	2	2
Skill Enhancement course					
TBP107	Network basics	0	0	3	3
Value added course					
UHPC101	Happiness Connect program	0	0	2	2
TVA101	Sustainable Development Goal	0	0	1	1
General Proficiency					
TGP101	General proficiency-I	-	-	-	1

Total Credit in 1st Semester - 28

Optional Addon – programming in C++ (TBP109)

Course code	Sem – 2, DS	L	T	P	Cr
Major Courses					
TCS104	Data structure using ‘C++’	2	0	0	2
TCS105	C++ Data Organization Lab.	0	0	1	1
TAI110	AI Foundation	3	0	0	3
TDS101	Data Analytics	3	0	0	3
TDS102	Data Processing and Analytics Lab.	0	0	1	1
TDS103	Python for data science and visualization Lab.	0	0	2	2
Minor course					
TMN103	Design Thinking & Strategic Innovation	3	0	0	3
TMN104	Innovation and Design Thinking Lab.	0	0	1	1
Multidisciplinary Courses					
MAT203	Applied Statistics	2	0	1	3
Ability enhancement course					
TAE103	Experiential soft competency-II	0	0	2	2
Skill enhancement course					
TBP111	Network Technician	0	0	3	3
Value added course					
TVA102	Environmental science	2	0	0	2
General Proficiency					
TGP102	General proficiency-II	-	-	-	1
<p>Students exiting the programme after securing 40 credits will be awarded UG Certificate in the relevant Discipline /Subject provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship in addition to 6 credits from skill-based courses earned during first and second Semester.</p>					

Total Credit in 2nd Semester - 27

B.Tech. CSE (Specialization in Data Science)					
2nd Year					
Course code	Sem – 3	L	T	P	Cr
Major Courses					
TCS201	Computer Organization and Architecture	3	0	0	3
TCS202	Computer Systems Architecture Lab.	0	0	1	1
TCS203	Object oriented programming using java	2	0	0	2
TCS204	Java Lab.	0	0	1	1
TCS205	Algorithm design and analysis	3	0	0	3
TCS206	Algorithm Development and Evaluation Lab.	0	0	1	1
TDS201	Analytics for Industries	3	0	0	3
TDS202	Industrial Data Analysis Lab.	0	0	1	1
Minor Courses					
TCC103	Network security	3	0	0	3
TCC104	Network Security and Defense Lab.	0	0	1	1
Multidisciplinary Courses					
TCS211	Discrete Mathematics	2	0	0	2
Skill enhancement course					
TSE201	Multimedia Technology	0	0	2	2
Value added					
TVA201	Disaster management	0	0	1	1
General Proficiency					
TGP201	General proficiency-III	-	-	-	1

Total Credit in 3rd Semester - 25

Course code	Sem – 4 , DS	L	T	P	Cr
Major Courses					
TCS212	Internet and web technology	2	0	0	2
TCS213	Web Development and Internet Technologies Lab.	0	0	1	1
TCS207	Computer Networks	2	0	0	2
TCS208	Computer Networking and Protocols Lab.	0	0	1	1
TCS209	Operating Systems	3	0	0	3
TCS210	OS Programming Lab..	0	0	1	1
TDS203	Data Warehousing and Multidimensional Modeling	2	0	0	2
TDS204	Data Warehousing and Modeling Lab.	0	0	1	1
Minor Courses					
TCC201	Practical approach to cyber security	3	0	0	3
TCC202	Applied Cyber Security Lab.	0	0	1	1
Skill enhancement course					
TSE206	Minor Project (IBM)	0	0	2	2
General proficiency					
TGP202	General proficiency-IV	-	-	-	1
<p>Students exiting the programme after securing minimum 80 credits will be awarded UG diploma in the relevant Discipline /Subject provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship during 1st year or second year summer term</p>					

Total Credit in 4th Semester - 20

B.Tech. CSE (Specialization in Data Science)					
3rd Year					
Course code	Sem – 5 , DS	L	T	P	Cr
Major Courses					
TCS303	Theory Of Computation	2	0	1	3
TCS305	Database Engineering.	3	0	0	3
TCS306	Database Design and Management Lab.	0	0	1	1
TDS301	Descriptive analytics	3	0	0	3
TDS302	Exploratory Data Analysis Lab.	0	0	1	1
Minor Courses					
TAI201	Machine learning (Intel)	3	0	0	3
TAI202	ML Algorithms Lab. (Intel)	0	0	1	1
Summer Internship					
TSI301	Internship	-	-	-	2
Ability Enhancement Course					
TAE301	Employability planning and preparation – I	0	0	2	2
	General proficiency				
TGP301	General proficiency-V	-	-	-	1

Total Credit in 5th Semester - 20

Course code	Sem – 6, DS	L	T	P	Cr
Major Courses					
TCS307	Project management for professionals	2	0	0	2
TCS308	Project management Lab.	0	0	1	1
TCS309	Compiler design	2	0	0	2
TCS310	Compiler and Interpreter Design Lab.	0	0	1	1
TDS303	Predictive analytics	3	0	0	3
TDS304	Predictive Data Analysis Lab.	0	0	1	1
Minor Courses					
TAI303	Computational Linguistics and Natural Language Processing (Intel)	3	0	0	3
TAI304	Natural Language Processing (Intel) Lab	0	0	1	1
Ability Enhancement course					
TAE302	Employability planning & preparation – II	0	0	2	2
Skill Enhancement					
TSE301	Major project (Implementation & presentation) (IBM)	0	0	3	3
General Proficiency					
TGP302	General proficiency-VI	-	-	-	1
Bachelor in Computer Science and Engg. (Specialization in AIML)					

Total Credit in 6th Semester - 20

B.Tech. CSE (Specialization in Data Science)						
4th Year						
Course code	Sem – 7, DS	L	T	P	Cr	
Major Courses						
	HONs Degree					
TAI401	AI for Computer Vision	3	0	0	3	
TAI402	Artificial Intelligence in Vision Lab.	0	0	1	1	
TAI403	Generative AI and prompt Engineering.	3	0	0	3	
TAI404	Generative AI Systems Lab.	0	0	1	1	
TDS403	Big Data Analytics	3	0	0	3	
TDS404	Big data Intelligence Lab.	0	0	1	1	
Minor Courses						
TCC403	Current trends in technology & its security & forensics aspects	3	0	0	3	
TCC404	Tech Trends and Digital Forensics Lab.	0	0	1	1	
Ability Enhancement course						
RM401	Research Methodology-I	2	0	0	2	
Skill Enhancement						
TDS405	NoSQL using Mongoddb	0	0	3	3	
Summer Internship						
TSI401	Internship(IBM)	-	-	-	3	

Total Credit in 7th Semester - 24

Course code	Sem – 8, DS	L	T	P	Cr
Major Courses					
TPR401	Research project in relevant specialization (The research outcomes of their project work may be published in peer-reviewed journals or may be presented in conferences /seminars or may be patented.)(IBM)	0	0	0	12
Minor Courses					
TCC315	Cryptography	3	0	0	3
TCC316	Cryptographic Algorithms Lab.	0	0	1	1
General proficiency					
B.Tech. (Honours with research) in Computer Science and Engg. (Specialization in AIML)					

Total Credit in 8th Semester - 16