

B. Tech. in Computer Science and Engineering with Specialization in Artificial Intelligence and Data Science (AI&DS) (2024 Admitted Batch)

FIRST SEMESTER

S. No.	Course			Contact Hours				Credits
	Category	Course Code	Course Title	L	T	P	Total	
1	HSMC		English	2	0	0	2	2
2	HSMC		English Lab	0	0	2	2	1
3	BSC		Engineering Mathematics -1	3	1	0	4	4
4	BSC		Engineering Physics-I	3	1	0	4	4
5	BSC		Engineering Physics Lab-I	0	0	2	2	1
6	ESC		Problem Solving and Programming	3	0	0	3	3
7	ESC		Problem Solving and Programming Lab	0	0	2	2	1
8	ESC		Workshop Practices OR	0	0	3	3	1.5
9	ESC		Engineering Graphics	0	0	3		
10	PR		Project-I	0	0	2	2	1
11	MNC		UHV-I Mandatory Induction Program	2 Weeks				0
Total							24	18.5

SECOND SEMESTER

S. No.	Course			Contact Hours				Credits
	Category	Course Code	Course Title	L	T	P	Total	
1	HSMC		UHV II: Understanding Harmony	2	1	0	3	3
2	BSC		Engineering Mathematics -II	3	1	0	4	4
3	BSC		Engineering Physics-II	3	0	0	3	3
4	BSC		Engineering Physics Lab - II	0	0	2	2	1
5	ESC		Basic Electrical Engineering	3	1	0	4	4
6	ESC		Basic Electrical Engineering Lab	0	0	2	2	1
7	ESC		Data Structures and Algorithms	3	0	0	3	3
8	ESC		Data Structures and Algorithms Lab	0	0	4	4	2
9	ESC		Workshop Practices OR	0	0	3	3	1.5
10	ESC		Engineering Graphics	0	0	3		
11	PR		Project-II	0	0	2	2	1
12	MNC		Professional Communication Practice (AUDIT)	0	1	0	1	0
Total							31	23.5

THIRD SEMESTER

S. No.	Course			Contact Hours				Credits
	Category	Course Code	Course Title	L	T	P	Total	
1	BSC	24XXXXXX	Mathematical Foundations for Artificial Intelligence and Data Science	3	1	0	4	4
2	PCC	XXXXXXX	Theory of Computation	3	0	0	3	3
3	PCC	XXXXXXX	Object Oriented Systems and Programming	3	0	0	3	3
4	PCC	XXXXXXX	Object Oriented Systems and Programming Lab	0	0	4	4	2
5	PCC	XXXXXXX	Database Management Systems	3	0	0	3	3
6	PCC	XXXXXXX	Database Management Systems Lab	0	0	2	2	1
7	PCC	XXXXXXX	Unix Programming Lab	1	0	2	3	2
8	PCC	XXXXXXX	Object Oriented Programming using Java	0	0	2	2	1
9	HSC	XXXXXXX	Economics	2	1	0	3	3
10	PRC	XXXXXXX	Summer Training-I (4 weeks)*	0	0	0	0	2
11	PCC	XXXXXXX	Competitive Programming-I	0	0	2	2	1
Total							29	25
Specialization in Artificial Intelligence and Data Science (AI&DS)								
12	PCC	XXXXXXX	Computational Fundamentals for Optimization	3	0	0	3	3
13	PCC	XXXXXXX	Computational Fundamentals for Optimization - Lab	0	0	2	2	1
Total							34	29

FOURTH SEMESTER

S. No.	Course			Contact Hours				Credits
	Category	Course Code	Course Title	L	T	P	Total	
1	HSC	XXXXXXXX	HSS Elective	2	1	0	3	3
2	PCC	XXXXXXXX	Digital Systems and Computer Organization	3	0	0	3	3
	PCC	XXXXXXXX	Digital Systems and Computer Organization Lab	0	0	2	2	1
3	PCC	XXXXXXXX	Design and Analysis of Algorithms	3	1	0	4	4
4	PCC	XXXXXXXX	Design and Analysis of Algorithms Lab	0	0	2	2	1
5	PCC	XXXXXXXX	Artificial Intelligence and Machine Learning	3	0	0	3	3
6	PCC	XXXXXXXX	Artificial Intelligence and Machine Learning Lab	0	0	2	2	1
7	PCC	XXXXXXXX	Software Engineering	3	0	0	3	3
8	PCC	XXXXXXXX	Competitive Programming-II	0	0	2	2	1
9	PEC	XXXXXXXX	Discipline Elective – 1	2	0	0	2	2
10	PEC	XXXXXXXX	Discipline Elective – 1 Lab	0	0	2	2	1
11	OMC	XXXXXXXX	Environmental Studies	3	0	0	3	Quali fying
Total							31	23
Specialization in Artificial Intelligence and Data Science (AI&DS)								
12	PCC	XXXXXXXX	Artificial Intelligence: Recent Trends and Applications	3	0	0	3	3
13	PCC	XXXXXXXX	Artificial Intelligence: Recent Trends and Applications - Lab	0	0	2	2	1
Total							36	27

FIFTH SEMESTER

S. No.	Course			Contact Hours				Credits
	Category	Course Code	Course Title	L	T	P	Total	
1	PCC	XXXXXXXX	Operating Systems	3	0	0	3	3
2	PCC	XXXXXXXX	Operating Systems Lab	0	0	2	2	1
3	PCC	XXXXXXXX	Computer Networks	3	1	0	4	4
4	PCC	XXXXXXXX	Computer Networks Lab	0	0	2	2	1
5	PCC	XXXXXXXX	Full Stack Development Lab	0	0	2	2	1
6	PEC	XXXXXXXX	Discipline Elective – 2	2	0	0	2	2
7	PEC	XXXXXXXX	Discipline Elective – 2 Lab	0	0	2	2	1
8	PEC	XXXXXXXX	Discipline Elective – 3	2	0	0	2	2
9	PEC	XXXXXXXX	Discipline Elective – 3 Lab	0	0	2	2	1
10	OMC	XXXXXXXX	Indian Constitution & Traditional Knowledge	3	0	0	3	Quali fying
11	PRC	XXXXXXXX	Summer Training-II (6 weeks) *	0	0	0	0	2
12	PCC	XXXXXXXX	Competitive Programming-III	0	0	2	2	1
13	HSC	XXXXXXXX	Logical and Quantitative Techniques-I	2	0	0	2	2
Total							28	21
Specialization in Artificial Intelligence and Data Science (AI&DS)								
14	PCC	XXXXXXXX	Intelligent Techniques for Predictive Data Analytics	3	0	0	3	3
15	PCC	XXXXXXXX	Intelligent Techniques for Predictive Data Analytics Lab	0	0	2	2	1
Total							33	25

SIXTH SEMESTER

S. No.	Course			Contact Hours				Credits
	Category	Course Code	Course Title	L	T	P	Total	
1	PCC	XXXXXXX	Web Technology	3	0	0	3	3
2	PCC	XXXXXXX	Web Technology Lab	0	0	2	2	1
3	PCC	XXXXXXX	Advanced Data Structures and Algorithms	3	0	0	3	3
4	PCC	XXXXXXX	Advanced Data Structures and Algorithms Lab	0	0	2	2	1
5	PCC	XXXX FLEXI CORE	Distributed and Cloud Computing OR Information Security and Cryptography	3	0	0	3	3
6	PEC	XXXXXXX	Discipline Elective – 4	3	0	0	3	3
7	PEC	XXXXXXX	Discipline Elective – 5	3	0	0	3	3
8	OEC	XXXXXXX	Open Elective – 1	3	0	0	3	3
9	Value Added	XXXXXXX	Selected Value-Added Course	2	0	0	2	Audit
10	HSC	XXXXXXX	Soft Skills for Employability	0	0	2	2	1
11	PRC	XXXXXXX	Minor Project	0	0	4	4	2
12	HSC	XXXXXXX	Logical and Quantitative Techniques-II	2	0	0	2	2
Total							32	25
Specialization in Artificial Intelligence and Data Science (AI&DS)								
13	PCC	XXXXXXX	Introduction to Data Analytics and Visualization	3	0	0	3	3
14	PCC	XXXXXXX	Statistical Analysis and Computing	3	0	0	3	3
Total							38	31

SEVENTH SEMESTER

S. No.	Course			Contact Hours				Credits
	Category	Course Code	Course Title	L	T	P	Total	
1	PEC	XXXXXXX	Discipline Elective – 6	3	0	0	3	3
2	OEC	XXXXXXX	Open Elective – 2	3	0	0	3	3
3	PRC	XXXXXXX	Major Project Part – 1	0	0	0	8	4
4	PRC	XXXXXXX	Summer Training - III (6 weeks) *	0	0	0	0	4
Total							14	14

EIGHTH SEMESTER

S. No.	Course			Contact Hours				Credits
	Category	Course Code	Course Title	L	T	P	Total	
1	PEC	XXXXXXX	Discipline Elective –7	3	0	0	3	3
2	OEC	XXXXXXX	Open Elective –3	3	0	0	3	3
3	PRC	XXXXXXX	Major Project Part –2	0	0	0	16	8
Total							22	14

***To be completed during the summer vacation.**

Total Program Credits: $18.5 + 23.5 + 29 + 27 + 25 + 31 + 14 + 14 = 182$

Discipline Elective – 1 and Discipline Elective – 1 Lab (offered in 4th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXX	Data Analytics using R and Python	2	0	0	2	2
2	XXXXXXX	Data Analytics using R and Python Lab	0	0	2	2	1
3	XXXXXXX	Mobile Application Development	2	0	0	2	2
4	XXXXXXX	Mobile Application Development Lab	0	0	2	2	1
5	XXXXXXX	Fundamentals of Smart Systems and IoT	2	0	0	2	2
6	XXXXXXX	Fundamentals of Smart Systems and IoT Lab	0	0	2	2	1
7	XXXXXXX	Introduction to Compiler Design	2	0	0	2	2
8	XXXXXXX	Introduction to Compiler Design Lab	0	0	2	2	1
9	XXXXXXX	Data Engineering	2	0	0	2	2
10	XXXXXXX	Data Engineering Lab	0	0	2	2	1
11	XXXXXXX	Foundation of Data Science and Visualization	2	0	0	2	2
12	XXXXXXX	Foundation of Data Science and Visualization Lab	0	0	2	2	1
13	XXXXXXX	Artificial and Computational Intelligence	2	0	0	2	2
14	XXXXXXX	Artificial and Computational Intelligence Lab	0	0	2	2	1

Discipline Elective – 2 and Discipline Elective – 2 Lab (offered in 5th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXXX	Fundamentals of Soft Computing	2	0	0	2	2
2	XXXXXXXX	Fundamentals of Soft Computing Lab	0	0	2	2	1
3	XXXXXXXX	Fundamentals of Computer and Cyber Security	2	0	0	2	2
4	XXXXXXXX	Fundamentals of Computer and Cyber Security Lab	0	0	2	2	1
5	XXXXXXXX	Data Mining and Data Warehousing	2	0	0	2	2
6	XXXXXXXX	Data Mining and Data Warehousing Lab	0	0	2	2	1
7	XXXXXXXX	Agile Software Development Process	2	0	0	2	2
8	XXXXXXXX	Agile Software Development Process Lab	0	0	2	2	1
9	XXXXXXXX	IoT Analytics	2	0	0	2	2
10	XXXXXXXX	IoT Analytics Lab	0	0	2	2	1
11	XXXXXXXX	Big Data Analytics	2	0	0	2	2
12	XXXXXXXX	Big Data Analytics Lab	0	0	2	2	1
13	XXXXXXXX	Search in AI	2	0	0	2	2
14	XXXXXXXX	Search in AI Lab	0	0	2	2	1
15	XXXXXXXX	Intelligent Robotics and Autonomous Systems	2	0	0	2	2
16	XXXXXXXX	Intelligent Robotics and Autonomous Systems Lab	0	0	2	2	1

Discipline Elective – 3 and Discipline Elective – 3 Lab (offered in 5th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXXX	Image Processing and Computer Vision	2	0	0	2	2
2	XXXXXXXX	Image Processing and Computer Vision Lab	0	0	2	2	1
3	XXXXXXXX	Introduction to Blockchain Technology	2	0	0	2	2
4	XXXXXXXX	Introduction to Blockchain Technology Lab	0	0	2	2	1
5	XXXXXXXX	Computing for Data Science	2	0	0	2	2
6	XXXXXXXX	Computing for Data Science Lab	0	0	2	2	1
7	XXXXXXXX	Sensor Technology & Android Programming	2	0	0	2	2
8	XXXXXXXX	Sensor Technology & Android Programming Lab	0	0	2	2	1
9	XXXXXXXX	Concept of Graph Theory	2	0	0	2	2
10	XXXXXXXX	Concept of Graph Theory Lab	0	0	2	2	1
11	XXXXXXXX	Computational Data Analysis	2	0	0	2	2
12	XXXXXXXX	Computational Data Analysis Lab	0	0	2	2	1
13	XXXXXXXX	Embedded Software Development	2	0	0	2	2
14	XXXXXXXX	Embedded Software Development Lab	0	0	2	2	1

Discipline Elective – 4 (offered in 6th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXXX	Introduction to Deep Learning	3	0	0	3	3
2	XXXXXXXX	Cryptocurrency Technologies	3	0	0	3	3

3	XXXXXXXX	Information Retrieval and Semantic Web	3	0	0	3	3
4	XXXXXXXX	Cloud Computing Essentials: Azure and AWS	3	0	0	3	3
5	XXXXXXXX	Reinforcement Learning	3	0	0	3	3
6	XXXXXXXX	Responsible AI and AI Ethics	3	0	0	3	3

Discipline Elective – 5 (offered in 6th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXXX	Machine Learning and Big Data	3	0	0	3	3
2	XXXXXXXX	Secure Design of Software Systems	3	0	0	3	3
3	XXXXXXXX	Fog and Edge Computing	3	0	0	3	3
4	XXXXXXXX	Statistical Analysis and Computing	3	0	0	3	3
5	XXXXXXXX	Time Series Analysis and Forecasting	3	0	0	3	3
6	XXXXXXXX	Edge and Federated Learning	3	0	0	3	3
7	XXXXXXXX	Retrieval Augmented Generation	3	0	0	3	3

Discipline Elective – 6 (offered in 7th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXXX	Machine Learning and Natural Language Processing	3	0	0	3	3
2	XXXXXXXX	Ethical Hacking & Prevention	3	0	0	3	3
3	XXXXXXXX	Introduction to Large Scale Database Systems	3	0	0	3	3
4	XXXXXXXX	Introduction to DevOps	3	0	0	3	3
5	XXXXXXXX	Industrial Automation and IOT	3	0	0	3	3
6	XXXXXXXX	Explainable AI	3	0	0	3	3
7	XXXXXXXX	Probabilistic Graphical Models	3	0	0	3	3
8	XXXXXXXX	AI for IoT	3	0	0	3	3
9	XXXXXXXX	Sentiment Analysis and Opinion Mining	3	0	0	3	3

Discipline Elective – 7 (offered in 8th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXXX	AI for Healthcare & Smart Systems	3	0	0	2	3
2	XXXXXXXX	Digital Forensics and Cyber Laws	3	0	0	2	3
3	XXXXXXXX	Social Network Analysis	3	0	0	2	3
4	XXXXXXXX	Software Construction using Kubernetes and Micro-services	3	0	0	3	3
5	XXXXXXXX	AI for Finance	3	0	0	3	3
6	XXXXXXXX	Agentic AI	3	0	0	3	3

Open Elective – I (offered in 6th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXX	Cyber Security and Digital Safety	3	0	0	3	3
2	XXXXXXX	Business Intelligence and Analytics	3	0	0	3	3

Open Elective – 2 (offered in 7th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXX	User Interface and User Experience Design	3	0	0	3	3
2	XXXXXXX	Software Testing Methodologies	3	0	0	3	3

Open Elective – 3 (offered in 8th Semester)

S. No.	Course Code	Course Title	L	T	P	Total	Credits
1	XXXXXXX	Social Media Analytics	3	0	0	3	3
2	XXXXXXX	Digital Twin - Fundamental Concepts to Applications in Advanced Manufacturing	3	0	0	3	3