

AI&DS Course Curriculum

S. No.	Course Code	Course Title	L	T	P	C
Semester 1						
1	MAL101	Engineering Mathematics -I	3	1	0	4
2	PHL101	Engineering Physics	3	0	0	3
3	PHL102	Engineering Physics Lab	0	0	2	1
4	IDL104	Design Thinking	2	0	0	2
5	IDL101	Introduction to Mechanical and Civil Engineering	3	0	0	3
6	IDP102	Workshop Practices & Engineering Survey Lab	0	0	2	1
7	IDP103	Computer Programming - I (C Language)	2	0	2	3
8	REL101	Introduction to Rail Systems Engineering	2	0	0	2
9	HSP101	Health, Wellness and Yoga	0	0	2	1
Total						20

Semester 2						
1	MAL102	Engineering Mathematics -II	3	1	0	4
2	CYL101	Engineering Chemistry	3	0	0	3
3	CYP102	Engineering Chemistry Lab	0	0	2	1
4	TLL101	Introduction to Multimodal Transportation Ecosystem	1	0	0	1
5	IDL105	Engineering Mechanics	2	1	0	3
6	IDP106	Engineering Mechanics Lab	0	0	2	1
7	IDL107	Introduction to Electrical and Electronics Engineering	3	0	0	3
8	IDL108	Basic Electrical and Electronics Engineering Lab	0	0	2	1
9	IDP109	Computer Programming - II (Python)	1	0	2	2
10	CSI101	Summer Internship - I (2 - 3 Weeks)	0	0	2	1
Total						20

Semester 3						
1	CSL201	Data Structures and Algorithms	3	0	0	3
2	CSP202	Data Structures and Algorithms Lab	0	0	2	1
3	CSL203	Object Oriented Programming with JAVA	3	0	0	3

4	CSP204	Object Oriented Programming with JAVA Lab	0	0	2	1
5	CSL205	Principles of Artificial Intelligence	3	0	0	3
6	TLL201	Logistics and Supply Chain management	2	0	0	2
7	MAL204	Discrete Mathematics	3	0	0	3
8	IDL230	Digital Electronics	2	1	0	3
9	IDL424	Entrepreneurship and Innovation	2	0	0	2
Total						21

Semester 4

1	CSL301	Computer Organization and Architecture	3	0	0	3
2	CSP302	Computer Organization and Architecture Lab	0	0	2	1
3	CSL303	Design and Analysis of Algorithms	3	0	2	4
4	CSL304	Operating Systems	3	0	0	3
5	CSL305	Pattern Recognition and Machine Learning	3	0	0	3
6	CSP306	Programming for AI and ML Lab	0	0	2	1
7	IDL	Signals and Systems	3	0	0	3
8	IDL318	Ethics in Engineering Practice	2	0	0	2
9	CSI301	Summer Internship - II (4 to 6 Weeks)	0	0	4	2
Total						22

Semester 5

1	CSL501	Computer Vision	3	0	0	3
2	CSL502	Computer Networks + Web Technology	3	0	2	4
3	CSL503	Database Management Systems	3	0	0	3
4	CSP504	Database Management Systems Lab	0	0	2	1
5	CSL505	Deep Learning	3	0	0	3
6	CSP506	Deep Learning Lab	0	0	2	1
7	CSL507	Software Engineering for AI Systems with MLOps	2	0	2	3
8	TTL	Intelligent Transportation System	3	0	0	3
9	CSL508	Department Elective - I	2	0	2	3

Total**21****Semester 6**

1	CSL601	Natural Language Processing	3	0	0	3
2	CSL602	Optimization for Machine Learning	3	0	0	3
3	TLL	AI and Data Science in Transportation and Logistics	2	0	2	3
4	TTL	Big Data Analytics in Transportation	2	0	2	3
5	CSLXX	Department Elective - II	2	0	0	2
6	IDL319	Engineering Economics, Costing, Estimation, and Tendering	3	0	0	3
7	HSSXX	Soft Skill Development	2	0	0	2
8		Summer Internship - III (6 to 8 Weeks)		0	6	3
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Total**22****Semester 7**

1	CSL701	Generative AI/Large Language Model	3	0	2	4
2	CSL702	Trustworthy AI system	3	0	0	3
3	TTL	Sensors in Transportation	3	0	2	4
4	TLL	Logistics Network Design and Optimization	2	0	0	2
5	IDL425	Operational Research	3	0	0	3
6	CSL4XX	Department Elective – III	2	0	0	2
7	CSL4XX	Open Elective – I	2	0	0	2
8	CSD430	B.Tech Minor Project	2	0	0	2

Total**22****Semester 8**

1	CSD435	B. Tech Major Project	0	0	24	12
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Total**12****Total Program Credit****160**

Department Elective - I

1	CSL325	Cloud Computing	2	0	2	3
2	CSL319	High Performance Computing	2	0	2	3
3	CSL327	Internet of Things	2	0	2	3
4	CSL431	Social Network Analysis	2	0	2	3

Department Elective - II

1	CSLXX	Data Engineering and Visualization	2	0	0	2
2	CSLXX	Human-Machine Interaction	2	0	0	2
3	CSL211	Time Series Data Analysis	2	0	0	2

Department Elective - III

1	CSL215	Data Mining and Warehousing	2	0	0	2
2	CSLXX	Probabilistic Graphical Model	2	0	0	2
3	CSL324	Reinforcement Learning	2	0	0	2

Open Elective

1		Through Swayam Portal	2	0	0	2
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