CENTRE FOR ARTIFICIAL INTELLIGENCE AND DATA SCIENCE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XX** **M.Tech. (Artificial Intelligence)**
Centre: **AID** **Centre for Artificial Intelligence and Data Science**
Year: **I**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S. No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	AID-501	Essential Mathematics for AI	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	AID-503	Computer Architecture for AI	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	AID-505	Machine Learning	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	AID-507	Advanced Data Structures and Algorithms	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	AID-509	Programming for AI	PCC	2	0	0	4	0	2	-	50	-	-	50
6.		Program Elective-I	PEC	3/4	-	-	-	-	-	-	-	-	-	-
		Total		**21/22**										
Semester-II (Spring)														
1.		Program Elective-II	PEC	3/4	-	-	-	-	-	-	-	-	-	-
2.		Program Elective-III	PEC	3/4	-	-	-	-	-	-	-	-	-	-
3.		Program Elective-IV	PEC	3/4	-	-	-	-	-	-	-	-	-	-
4.		Program Elective-V	PEC	3/4	-	-	-	-	-	-	-	-	-	-
5.	AID-502	Project in AI	PCC	2	-	-	-	-	-	-	-	30	70	-
6.	AID-700	Seminar	SEM	2	-	-	-	-	-	-	-	-	100	-
		Total		**16/20**										

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Program Code: **XX** **M.Tech. (Artificial Intelligence)**
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Year: **II**

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S. No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	AID-701A	Dissertation Stage-I (to be continued next semester)	DIS	12	-	-	-	-	-	-	-	-	100	-
		Total		**12**										
Note: Students can take 1 or 2 audit courses as advised by the supervisor, if required.														
Semester-II (Spring)														
1.	AID-701B	Dissertation Stage-II (continued from III semester)	DIS	18	-	-	-	-	-	-	-	-	100	-
		Total		**18**										

There are two baskets for electives: “Core AI” and “Applications of AI”. A student needs to take 5 electives, of which, at least two electives should be from the Core AI basket and at least two electives should be from the Applications of AI basket.

Program Elective Courses M.Tech. (Artificial Intelligence)

(B1.Core AI Elective Courses)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	AID-551	Convex Optimization in Machine Learning	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
2.	CSN-515	Data Mining and Warehousing	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
3.	AID-552	Deep Learning	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
4.	AID-553	Digital Image Processing	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
5.	MAN-628	Evolutionary Algorithms	PEC	3	3	0	0	3	-	20-35	–	20-30	40-50	-
6..	CSN-528	Natural Language Processing	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
7.	MAN-653	Numerical Optimization	PEC	3	3	0	0	3	-	20-35	–	20-30	40-50	-
8.	AID-554	Reinforcement Learning	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
9.	AID-555	Time Series Data Analysis	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
10.	AID-556	Introduction to Compressive Sensing	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
11.	AID-557	Neuromorphic computing with emerging memories and architectures	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
12.	AID-558	DataStream Mining	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-
13.	AID-559	Stochastic Processes and their Applications	PEC	4	3	1	0	3	-	20-35	–	20-30	40-50	-

Program Elective Courses M.Tech. (Artificial Intelligence)
(B2.Applications-based AI Elective Courses)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight(%)				
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	AID-560	Artificial Intelligence for Decision Making	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.	AID-561	AI for Earth Observation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
3.	AID-562	AI for investment	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
4.	AID-563	Applications of AI in Physics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
5.	AID-564	Medical Physics for AI	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-
6..	AID-565	Computer Vision	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
7.	AID-566	Game Theory	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
8.	CSN-527	Internet of Things	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
9.	AID-567	Introduction to Materials Informatics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
10.	CSN-519	Social Network Analysis	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
11.	ECN-526	Statistical Machine Learning for Variation-Aware Electronic Device and Circuit Simulation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
12.	AID-568	ML and AI Applications in Earth Sciences	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
13.	EEN-581	Intelligent Control Techniques	PEC	4	3	0	2	3	-	10-25	25	15-25	30-40	-

14.	AID-569	Applications of AI in Biology	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
15.	AID-570	VLSI architectures for AI in CMOS technology	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
16.	AID-583	Data-driven Analytics for Smart Transportation Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-