

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

M.Tech. in Data Science

Program Code : TBD

Centre : CAIDS

Year : I

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Autumn Semester														
1.	TBD	Mathematics for Data Science	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	TBD	Principles of Database Systems	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	TBD	Machine Learning	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	TBD	Data Structures and Algorithms	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	TBD	Programming for DS	PCC	2	0	0	4	0	2	-	50	-		50
6.	TBD	PEC-I	PEC	3/4	3	0/1	0/2	3	0	25/10-25	0/25	20-30/15-25	40-50/30-40	-
Total				21/22	15	3/4	6/8	15	2					
Spring Semester														
1.	TBD	PEC-II	PEC	3/4	3	0/1	0/2	3	0	25/10-25	0/25	20-30/15-25	40-50/30-40	-
2.	TBD	PEC-III	PEC	3/4	3	0/1	0/2	3	0	25/10-25	0/25	20-30/15-25	40-50/30-40	-
3.	TBD	PEC-IV	PEC	3/4	3	0/1	0/2	3	0	25/10-25	0/25	20-30/15-25	40-50/30-40	-
4.	TBD	PEC-V	PEC	3/4	3	0/1	0/2	3	0	25/10-25	0/25	20-30/15-25	40-50/30-40	-
5.	TBD	Project in Data Science	PCC	2								30	70	
6.	TBD	SEMINAR	PCC	2	0	0	0	0	0			30	70	-
Total				16/20	-	-	-							
The contact hours, exam duration and relative weight of PEC will be as per the course nature (3+0+0) or (3+1+0) or (3+0+2) and detailed syllabi														

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

B1:LIST OF CORE DS ELECTIVES			B2:LIST OF DS APPLICATIONS ELECTIVES		
S. No.	Course Title		S. No	Course Title	
1.	Big Data Analytics		1.	Blockchain Technology	
2.	Data Mining and Warehousing		2.	ML and AI Applications in Earth Science	
3.	Deep Learning		3.	Data Science in Bioinformatics	
4.	Ethics in Data Science		4.	Data Science for Decision Making	
5.	Evolutionary Algorithms		5.	AI for investment	
6.	Intrusion Detection Systems		6.	Digital Image Processing	
7.	Natural Language Processing		7.	Graphs Algorithms in Data Science	
8.	Operations Research		8.	Internet of Things	
9.	Reinforcement Learning		9.	Leveraging Data Science for Finance	
10.	Spreadsheet Modeling and Simulation		10.	Multi-Objective and Multi-Criteria Decision Making	
11.	Soft Computing		11.	Parallel Computing	
12.	Statistical Inference		12.	Pattern Recognition	
13.	Time Series Data Analysis		13.	Recommender Systems	
			14.	Social Network Analysis	