

1.	Title of the course	Data Science for Networks
2.	Course number	CS535L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CS5032/21
6.	To be offered by	Department of Computer Science and Engineering
7.	To take effect from	July 2022
8.	Prerequisite	CoT
9.	Course Objective(s): To study the data driven models of complex networks, especially structural dependencies of high-dimensional network data. To understand the large-scale networks from the perspective of relational big data.	
10.	Course Content: Review of classical network models: random graphs, small-world graphs, and network formation models; Data processing on networks: graph signal processing; Multiscale transform of network data: wavelets; Network sampling; Exchangeable models: graphon and stochastic block models, and edge-exchangeable models; Network topology inference; Prediction of processes on network graphs.	
11.	Textbook(s): 1. Crane H, <i>Probabilistic Foundations of Statistical Network Analysis</i> , 1st Edition, CRC (2018). 2. Manoj B S, Chakraborty A and Singh R, <i>Complex Networks: A Networking and Signal Processing Perspective</i> , 1st Edition, Pearson (2018).	
12.	Reference(s): 1. Caldarelli G and Chessa A, <i>Data Science and Complex Networks</i> , 1st Edition, Cambridge (2016). 2. Kolaczyk E D and Csardi G, <i>Statistical Analysis of Network Data with R</i> , 1st Edition, Springer (2020). 3. Leskovec J, Rajaraman A and Ullman J D, <i>Mining of Massive Data Sets</i> , 3rd Edition, Cambridge University Press (2018).	