

*7<sup>th</sup> Semester*

<b>7<sup>th</sup> Semester</b>	<b>RCS7D003</b>	<b>Social Network Analysis</b>	<b>L-T-P 3-0-0</b>	<b>3 CREDITS</b>
------------------------------------	-----------------	--------------------------------	------------------------	----------------------

**Module I:****(10 Hours)**

Social Media- Descriptions and Definitions-social media networks-introduction, rise of social media for consumer applications, applying social media to national priorities Social Media Marketing - Theory and Practice, Social Media Marketing (including Viral Marketing), Mobile Marketing, Web Analytics, Social Media Analytics - Criteria of Effectiveness, Metrics, Techniques (e.g., Social Network Analysis, Semantic Analysis, Online Sentiment Analysis), Tools, Social Media Management, Centrality Measures-opinion mining, feature based sentiment analysis

**Module II:****(10 Hours)**

Community Detection-communities in social media, community detection, taxonomy of community criteria, nodes-centric community detection, complete mutuality: cliques, group-centric community detection, latent space models, spectral clustering, and hierarchy-centric community detection. Community evaluation- measuring a clustering result, normalized mutual information, evaluation using semantics

**Module III:****(10 Hours)**

Mining Social Network Data, Network Topology Discovery, Link Prediction- definition of link prediction problem, challenges, methods for link prediction-shortest path, neighbourhood based preferential attachment, ensemble of all paths, hitting and commute times, rooted page rank. Comparison of different methods.

**Module IV:****(10 Hours)**

Cascading properties of networks: Information/influence diffusion on networks, maximizing influence spread, power law and heavy tail distributions, preferential attachment models, small world phenomenon. Mining Graphs: Community and cluster detection: random walks, spectral methods; link analysis for web mining. Managing Big Data, Case Studies-semantic analysis-handling internet slang

**Books:**

- [1] Wasserman, Stanley, & Faust, Katherine. Social Network Analysis: Methods and Applications. Cambridge: Cambridge University Press, 1994
- [2] Scott, John. Social Network Analysis: A Handbook. 2nd Ed. 1994. Newberry Park, CA: Sage
- [3] Robert Hanneman and Mark Riddle. Introduction to Social Network Methods, 2004

**Digital Learning Resources:**

Course Name: Social Networks  
 Course Link: [https://onlinecourses.nptel.ac.in/noc19\\_cs66/preview](https://onlinecourses.nptel.ac.in/noc19_cs66/preview)  
 Course Instructor: Dr. Poonam Saini & Prof. Sudarshan Iyengar

Course Name: Social Networks  
 Course Link: [https://onlinecourses.nptel.ac.in/noc20\\_cs78/preview](https://onlinecourses.nptel.ac.in/noc20_cs78/preview)  
 Course Instructor: Prof. Sudarshan Iyengar