

<b>SOCIAL NETWORK ANALYSIS</b> <b>[As per Choice Based Credit System (CBCS) scheme]</b> <b>(Effective from the academic year 2017 - 2018)</b> <b>SEMESTER – V</b>			
Subject Code	17IS552	IA Marks	40
Number of Lecture Hours/Week	03	Exam Marks	60
Total Number of Lecture Hours	40	Exam Hours	03
CREDITS – 03			
Module 1			Teaching Hours
<b>Introduction to social network analysis and Descriptive network analysis:</b> Introduction to new science of networks. Networks examples. Graph theory basics. Statistical network properties. Degree distribution, clustering coefficient. Frequent patterns. Network motifs. Cliques and k-cores.			8 Hours
Module 2			
<b>Network structure, Node centralities and ranking on network:</b> Nodes and edges, network diameter and average path length. Node centrality metrics: degree, closeness and betweenness centrality. Eigenvector centrality and PageRank. Algorithm HITS.			8 Hours
Module 3			
<b>Network communities and Affiliation networks:</b> Networks communities. Graph partitioning and cut metrics. Edge betweenness. Modularity clustering. Affiliation network and bipartite graphs. 1-mode projections. Recommendation systems.			8 Hours
Module 4			
<b>Information and influence propagation on networks and Network visualization:</b> Social Diffusion. Basic cascade model. Influence maximization. Most influential nodes in network. Network visualization and graph layouts. Graph sampling. Low -dimensional projections			8 Hours
Module 5			
<b>Social media mining and SNA in real world: FB/VK and Twitter analysis:</b> Natural language processing and sentiment mining. Properties of large social networks: friends, connections, likes, re-tweets.			8 Hours
<b>Course Outcomes:</b> The students should be able to:			
<ul style="list-style-type: none"> <li>• Define notation and terminology used in network science.</li> <li>• Demonstrate, summarize and compare networks.</li> <li>• Explain basic principles behind network analysis algorithms.</li> <li>• Analyze real world network.</li> </ul>			
<b>Question paper pattern:</b> The question paper will have TEN questions. There will be TWO questions from each module. Each question will have questions covering all the topics under a module. The students will have to answer FIVE full questions, selecting ONE full question from each module.			
<b>Text Books:</b>			
<ol style="list-style-type: none"> <li>1. David Easley and John Kleinberg. "Networks, Crowds, and Markets: Reasoning About a Highly Connected World." Cambridge University Press 2010.</li> <li>2. Eric Kolaczyk, Gabor Csardi. "Statistical Analysis of Network Data with R (Use R!)". Springer, 2014.</li> <li>3. Stanley Wasserman and Katherine Faust. "Social Network Analysis. Methods and</li> </ol>			

Applications." Cambridge University Press, 1994.

**Reference Books:**

1. NIL

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**H.O.D.**

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