INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN AND MANUFACTURING, KANCHEEPURAM

INTRODUCTION OF NEW COURSE

Course Title	Graph Theory	Course No *(will be assigned)*				
Specialization	Mathematics	Structure (LTPC)	3	0	0	3
Offered for	UG/PG/Ph.D	Status	Core ☐		Elective ▬	
Faculty	Dr. Shalu M A	Type	New ▬		Modification ☐	
Pre-requisite	COT	To take effect from	Jan 2012			
Submission date	November 2011	Date of approval by AAC				
Objectives	Model various applications as problems on graphs. Determine whether or not a graph possesses certain properties. Design efficient algorithms for solving graph problems. Discuss a few long standing open problems in graph theory.					
Contents of the course *(With approximate break up of hours)*	Fundamental concepts and applications: subgraph, isomorphism, matrices associated with graphs, degrees, shortest path algorithm (7hours) Bipartite graphs, trees, cut edges, cut vertices, spanning trees, DFS algorithm and BFS algorithm (6 hours) Planar graphs (4 hours), Matching and Factors (4 hours), Connectivity and Paths (4 hours), Edges and Cycles (5 hours) Graph coloring : Edge coloring and Vertex coloring (6 hours) Perfect graphs and outline of the strong perfect graph theorem (5 hours) A few open problems (1 hour) .					
Text book	1. D. B. West, Introduction to graph theory, Prentice Hall of India, 2004					
References	2. J. A. Bondy and U.S.R. Murty, Graph Theory and Applications (Freely downloadable from Bondy's website) 3. M. Chudnovsky, N. Robertson, P.D. Seymour, and R.Thomas, The strong perfect graph theorem, Ann. Math. **164** (2006), 51--229					