INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN AND MANUFACTURING (IIITD&M) KANCHEEPURAM

INTRODUCTION OF NEW COURSE

Course Title	Advanced Data Structures & Algorithms	Course No *(will be assigned)*				
Specialization	Computer Engineering	Structure (LTPC)	3	0	0	3
Offered for	UG/PG/Ph.D	Status	Core ☐		Elective ■	
Faculty	DrMasilamani V / DrSivaselvan B	Type	New ■		Modification ☐	
Pre-requisite		To take effect from	Jan 2011			
Submission date	November 2010	Date of approval by AAC				
Objectives	Data Structures & Algorithms play an important role in solving problems efficiently using computers. Application specific data structures & algorithms is the recent trend in computer science and the course is oriented towards imparting skill to design efficient data structures inorder to develop faster algorithms. The course aims to expose the student to the advances in the area of data structures and algorithm design & analysis.					
Contents of the course *(With approximate break up of hours)*	Review of Basic Data Structures - Trees - Graphs, Priority Queues - Leftist Trees, Binomial, Fibonacci Heaps , Dictionary Structures - Hash tables, Balanced BST, Static - Dynamic BST - Splay Trees, Red Black Trees, Finger search trees, B Trees Multidimensional - Spatial Data structures - Quad trees, Oct trees, Kinetic Data Structures Tries - Suffix trees, String searching - Application specific data structures - Image processing - Data Mining - Network Time Complexity - Amortized Analysis, Recurrence Relations Revisited, External Sorting, Tournament Trees, Order Statistics, Huffman Trees, FFT Algorithm, Matrix Chain Multiplication, Subset sum problem, Network Flow, NP Completeness					
Text and References	**References** 1. Sartaj Sahni, et.al, Handbook of Data Structures & Applications, CRC Press, 2005. 2. Thomas H Cormen, et.al, Introduction to Algorithms, MIT Press, 2nd/3rd Edition. 3. Aho, Hopcrof, Ullmann, Data Structures & Algorithms, Addison Wesley, 1983. 4. The course will also involve discussions on landmark papers in specific fields of data structures, algorithms and applications in engineering domain.					