

Annexure 'D'

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY DESIGN AND MANUFACTURING (IIITDM) KANCHEEPURAM

Course Title	Network Algorithmics	Course No	To be allotted later on by the office		
Specialization	COE	Structure (IPC)	3	0	3
Offered for	PG/PhD	Status	Core <input type="checkbox"/>	Elective <input checked="" type="checkbox"/>	
Pre-requisite	Data Structures & Algorithms, Computer Networks	To take effect from			
Objectives	To make familiar with the set of techniques to overcome implementation bottlenecks at all network devices and to provide a set of principles and models to help overcome current and future networking bottlenecks.				
Course Outcomes	The student can able to implement an efficient algorithms and architectures for packet processing. Can able to design high Speed packet processing network systems such as bridges, switches, routers and firewalls.				
Contents of the course <i>(With approximate break up of hours)</i>	<p>Introduction to Network Algorithmics (NA) - Bottlenecks and techniques (3hrs). Network Implementation Models - Protocols, Hardware, network device architectures and operating Systems (4hrs). Fifteen NA Implementation Principles and Actions (6hrs). Demultiplexing and Protocol Processing (6hrs). Exact-Match Lookups, Prefix-Match Lookups (6hrs). Packet Classifications and Routers as Distributed Systems (6hrs). High Speed Packet Classification Hardware Architectures - TCAM Razor, Bit Weaving, All-Match Redundancy Removal, Sequential Decomposition, and Topological Transformations. (11hrs)</p>				
Text Book	1. George Varghese, "Network Algorithmics - An Interdisciplinary Approach to Designing Fast Networked Devices", Morgan Kaufman Publishers, 1 st Edition, 2005, ISBN: 0-12-088477-1.				
Reference Books	<p>1. Chad R. Meiners, Alex X. Liu, Eric Torng, Hardware Based Packet Classification for High Speed Internet Routers", Springer Publisher, 1st Edition, 2010. ISBN 978-1-4419-6699-5. 2. Deepankar Medhi, Karthikeyan Ramasamy, Jane Zupan, "Network Routing: Algorithms, Protocols, and Architectures", Morgan Kaufman Publishers, 1st Edition, 2007, ISBN-0120885883.</p>				