



# COMMUNICATION NETWORKS

## **PROF. GOUTAM DAS**

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**INTENDED AUDIENCE :** Master students in the field of telecommunication of final year B. Tech/BE students of EE, ECE, CS departments

**INDUSTRIES APPLICABLE TO :** CISCO, Broadcom, QUALCOMM, Ericson, Samsung, Vodafone, Jio, Tejas Network, Xilinx etc.

### **COURSE OUTLINE :**

A network is a set of devices (nodes) connected through communication links. Computer network indicates a collection of autonomous computers interconnected by means of communication infrastructure. Two computers are said to be interconnected if they are able to exchange information. The connection might be via a copper wire, fiber optics, microwaves, infrared, and communication satellites. Networks come in many sizes, shapes and forms and are usually connected together to make larger networks. Internet is the most well-known example of a network of networks.

Study of networks require knowledge of networking architectures, protocol or algorithm that carries out different sub-task of networking or information exchange and tools for network design and its performance analysis.

### **ABOUT INSTRUCTOR :**

Prof. Goutam Das received the Ph.D. degree from the University of Melbourne, Melbourne, Australia, in 2008. He has worked as a Postdoctoral Fellow at Ghent University, Ghent, Belgium, from 2009–2011. He is currently working as an Associate Professor in the Indian Institute of Technology Kharagpur, Kharagpur, India. His research interests include optical access networks, optical data center networks, radio over fiber technology, optical packet switched networks and media access protocol design for application specific requirements.

### **COURSE PLAN :**

**Week 1:** Communication Networks basics

**Week 2:** Circuit Switched Networks

**Week 3:** Switching Concepts

**Week 4:** Layered Architecture, Introduction to DLL Layer

**Week 5:** MAC Protocols – Ethernet, Wireless LAN, PON

**Week 6:** Network Layer - IP

**Week 7:** Routing Algorithms and Associated Protocols

**Week 8:** Transport Layer

**Week 9:** Introduction to Queuing

**Week 10:** Application of Queuing theory for Design of Circuit Networks

**Week 11:** Performance analysis of CSMA CD, CSMA CA

**Week 12:** Advanced Networking Concepts: Open Flow switching, SDN and NFV, Network slicing, cognitive Networks