

## Faculty of Engineering & Technology

### Interfacing Circuits and Networks

#### Information :

**Course Code :** COM 584

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Specialization of Electronics & Communication

#### Area Of Study :

- Provide students with a general understanding of the principles of computer communication networks.
- Provide students with the most recent digital communications techniques in the broad field of cables and protocols.
- Provide students with the necessary knowledge and skills to develop further understanding on the challenges and opportunities brought in designing current and future computer communications networks.

#### Description :

Physical Layer: Properties of the Physical Layer, Movement of bits, Transmission Media Open Wire; Twisted Pair; Coaxial Cable; Optical Fiber. Link Layer, Role of the data link layer. Local Area Networks Definition of a Local Area Network, Ethernet , Network Interface Card , Medium Access Control Layer , Access to the Shared Medium (Cable), Transceiver Preamble, Carrier Sense Checking for other users; Possible contention. , Collision Detection (CD) Cabling (media): 10B5 Thick Ethernet (low loss co-axial cable), 10B2 Thin Ethernet (low cost co-axial cable) , 10BT Unshielded Twisted Pair (unshielded twisted pair cable, UTP CAT-5) , 10BF Fiber Optic Links (point to point fiber link), Higher bandwidth twisted pair cable (CAT-5e, CAT-6, CAT-7, STP), Higher Speed Communication interfaces: Fast Ethernet 100 Mbps, Gigabit Ethernet 1 Gbps, 10 Gbps, and higher.

#### Course outcomes :

##### a. Knowledge and Understanding: :

- 1 - Have a Knowledge of contemporary Network communications issues.
- 2 - Have a Conceptual understanding of the mathematics, statistics, and computer works.

##### b. Intellectual Skills: :

- 1 - Apply knowledge of mathematics, science and engineering.
- 2 - Creative, innovative and pro-active demeanor.

##### c. Professional and Practical Skills: :

- 1 - Use the techniques, skills, and modern engineering tools necessary for engineering practice.
- 2 - Apply of systematic engineering synthesis and design processes
- 3 - Apply of established engineering methods to complex engineering problem solving.

##### d. General and Transferable Skills: :

- 1 - Collaborate effectively within multidisciplinary team
- 2 - Communicate effectively
- 3 - Demonstrate efficient IT capabilities.
- 4 - Effectively manage tasks, time, and resources.

### **Course Topic And Contents :**

<b>Topic</b>	<b>No. of hours</b>	<b>Lecture</b>	<b>Tutorial / Practical</b>
Introduction to networks	5	3	2
Network Protocols	10	6	4
Physical Layer	10	6	4
Transmission Media	10	6	4
Data Link Layer	10	6	4
Medium Access Control Layer	10	6	4
Local Area Networks	10	6	4
Selected topics on computer communication systems	10	6	4

### **Teaching And Learning Methodologies :**

Interactive Lecturing

Tutorial/Discussion

Laboratory

### **Course Assessment :**

<b>Methods of assessment</b>	<b>Relative weight %</b>	<b>Week No</b>	<b>Assess What</b>
Final exam	40.00		
In Class Quizzes and participation	20.00		
o Electronic and computer Lab Experiments	10.00		
o Mid-Term Exams	30.00		

### **Recommended books :**

"Computer Networking: A Top-Down Approach," by Jim Kurose and Keith Ross, 5th Edition