

Computer Networks					
Credit Hours:	2	Course Code:	COSC-2104	Prerequisites:	None
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. <i>Understand</i> the fundamental principles of communication and networking.				C	1
2. <i>Explain</i> the services and functions provided by each layer in the internet protocol stack.				C	2
3. <i>Identify</i> various internetworking devices and protocols, and their functions in a network.				C	3
4. <i>Install</i> network for small scale organizations.				C	3
5. <i>Evaluating</i> student's knowledge and skills in computer networks				C	4
* BT= Bloom's Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
#	SDG	Relevant CLOs			
1	SDG 4: Quality Education	CLO 2: Explain the services and functions provided by each layer in the internet protocol stack.			
2	SDG 17: Partnerships for the Goals	CLO 4: Install network for small scale organizations			
3	SDG 9: Industry, Innovation and Infrastructure	CLO 3: Identify various internetworking devices and protocols, and their functions in a network. CLO 4: Install network for small scale organizations.			
Course Contents:					
Introduction to Data Communications & Networks, Communication Components, Transmission Modes, Standards, Protocols, Network Topologies, Effectiveness of Communication, Types of Network, Network Devices, Layered Network Models (OSI Reference Model, TCP/IP Networking Architecture), Physical Layer Functionality, Data Link Layer Functionality, Network Layer Functionality, Transport Layer Functionality, Application Layer Functionality, Guided Media, Unguided Media, Network Servers, MAC Addressing(ARP,RARP), IPV4 Addressing, IPV6 Addressing, Sub-netting, Super-netting/CIDR, Network Address Translation, Virtual LANs, Circuit Switch Networks, Packet Switch Networks, Network Security, Cryptography, Mobile Networks, Evolution of Cellular Networks, Internet of Things (IoTs).					
Teaching Methodology:					
Lectures, Written Assignments, Practical labs, Semester Project, Presentations.					
Course Assessment:					
Mid Term Exams, Final Term Exams, Assignments, Quizzes, Project, Presentations, Practical Exam					
Reference Material:					
7. Data Communications and Networking by Behrouz A. Forouzan, McGraw-Hill Science, 4 th or 5 th Edition. 8. Data and Computer Communications by William Stallings, Prentice Hall, 9 th Edition, 2010;ISBN-10: 0131392050 9. Computer Networking: A Top-Down Approach, 7th edition, by James Kurose and Keith Ross (ISBN-13: 978-0133594140)					

Computer Networks - Lab					
Credit Hours:	1	Course Code:	COSC-2204	Prerequisites:	None
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. <i>Understand</i> the fundamental principles of communication and networking.				C	1
2. <i>Explain</i> the services and functions provided by each layer in the internet protocol stack.				C	2
3. <i>Identify</i> various internetworking devices and protocols, and their functions in a network.				C	3
4. <i>Install</i> network for small scale organizations.				C	3
5. <i>Evaluating</i> student’s knowledge and skills in computer networks				C	4
* BT= Bloom’s Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
#	SDG	Relevant CLOs			
1	SDG 4: Quality Education	CLO 2: Explain the services and functions provided by each layer in the internet protocol stack.			
2	SDG 17: Partnerships for the Goals	CLO 4: Install network for small scale organizations			
3	SDG 9: Industry, Innovation and Infrastructure	CLO 3: Identify various internetworking devices and protocols, and their functions in a network. CLO 4: Install network for small scale organizations.			
Course Contents:					
Simulator Installation and basic configuration and requirements (Cisco Packet Tracer), Graphical Network Simulator installation and working (GNS), Layer 2 Devices Configuration, Layer 3 Devices Configuration, IPV4 DHCP (Part-I), IPV4 DHCP (Part-II), IPV6 DHCP (Part-I), IPV6 DHCP (Part-II) , Network Address Translation-(Part-I), Network Address Translation-(Part-II), Virtual Lans, Static VLans, Dynamic VLans, DNS Configuration, Web Server /HTTP Configuration, Analyse working and performance of key technologies like Static Routing, Identify various internetworking devices and protocols & working with Wireshark.					
Teaching Methodology:					
Lectures, Written Assignments, Practical labs, Semester Project, Presentations.					
Course Assessment:					
Mid Term Exams, Final Term Exams, Assignments, Quizzes, Project, Presentations, Practical Exam					
Reference Material:					

1. Data Communications and Networking by Behrouz A. Forouzan, McGraw-Hill Science, 4th or 5th Edition.
2. Data and Computer Communications by William Stallings, Prentice Hall, 9th Edition, 2010;ISBN-10: 0131392050
3. Computer Networking: A Top-Down Approach, 7th edition, by James Kurose and Keith Ross (ISBN-13: 978-0133594140)