Republic of Iraq
The Ministry of Higher Education
& Scientific Research

University: Anbar
College: CS & IT
Department: :CS & IT
Stage: 3rd
Instructor name: Dr. Salah Awad Salman
Academic status: Ass. Prof.
Qualification: PhD
Place of work:

Course Weekly Outline

Course Name : Communications and Networks Fundamentals

Course Instructor	Dr. Salah Awad Salman				
E-mail	Salah_eng1996@yahoo.com				
Title	3107:Communications and Networks Fundamentals – CS 3214:Computer Networks I - IS				
Course Coordinator	-				
Course Objective	The students will be able to: 1. Build an understanding of the fundamental concepts of computer networking. 2. Familiarize the student with the basic taxonomy and terminology of the computer networking area. 3. Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking. 4. Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.				
Course Description	This course is to provide students with an overview of the concepts and fundamentals of data communication and computer networks. Topics to be covered include: data communication concepts and techniques in a layered network architecture, communications switching and routing, types of communication, network congestion, network topologies, network configuration and Management, network model components, layered network models (OSI reference model, TCP/IP networking architecture) and their protocols, various types of networks (LAN, MAN, WAN and Wireless networks) and their protocols.				
Textbook	Data Communications and Networking, 3, 4 /e, Behrouz A Forouzan				
References	Computer Networks, Fourth Edition, Andrew S. Tanenbaum.				
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	25	**15**	**10**	**-**	**50**
General Notes	The course is supplemented by a practical component				

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Week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1		**PART 1: Overview: Chapter: 1 Introduction** **1.1 DATA COMMUNICATIONS** Components, Data Representation, Data Flow	Lab1: Comm. Sys.	
2-3		**1.2 NETWORKS** Distributed Processing , Network Criteria, Physical Structures, Network Components: NIC, Repeater HUB, Bridge, Router, BRouter, GATEWAY	Lab2: Simulator :Comm. Sys.	
4-5		**1.2 NETWORKS** Network Models, Categories of Networks, Network Classification, LAN, MAN and WAN Network topologies: Mesh, Star, Bus and Ring, the advantages and disadvantages of each topology. Interconnection of Networks: Internetwork	Lab2: Simulator :Comm. Sys	
6		**1.3 THE INTERNET** A Brief History, The Internet Today **1.4 PROTOCOLS AND STANDARDS** Protocols , Standards, Standards Organizations, Internet Standards	Lab3:Network Components	
7-9		**Chapter: 2 Network Models** **2.1 LAYERED TASKS** Sender, Receiver, and Carrier , Hierarchy **2.2 THE OSI MODEL** Layered Architecture, Peer-to-Peer Processes, Encapsulation **2.2.1 LAYERS IN THE OSI MODEL** Physical Layer, Data Link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer, Application Layer, Summary of Layers	Lab3:Network Components	
10-11		**2.3 TCP/IP PROTOCOL SUITE** Physical and Data Link Layers, Network Layer Transport Layer, Application Layer	Lab4:Network Topology	
12		**2.4 ADDRESSING** Physical Addresses, Logical Addresses, Port Addresses , Specific Addresses	Lab4:Network Topology	
13-14		**PART 2: Physical Layer and Media** **Chapter : 3 Data and Signals** **3.1 ANALOG AND DIGITAL** Analog and Digital Data, Analog and Digital Signals, Periodic and Non-periodic Signals **3.2 PERIODIC ANALOG SIGNALS** Sine Wave, Phase, Wavelength, Time and Frequency Domains, Composite Signals, Bandwidth **3.3 DIGITAL SIGNALS** Bit Rate, Bit Length, Digital Signal as a Composite Analog Signal, Transmission of Digital Signals	Lab4:Network Topology	
15		**3.4 TRANSMISSION IMPAIRMENT** Attenuation , Distortion, Noise **3.4.1 DATA RATE LIMITS** Noiseless Channel: Nyquist Bit Rate, Noisy Channel: Shannon Capacity, Using Both Limits	Lab5:Cabling	
16		**Chapter: 4 Transmission Media** **4.1 GUIDED MEDIA** Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable **4.2 UNGUIDED MEDIA: WIRELESS** Radio Waves, Microwaves, Infrared	Lab5:Cabling	

Instructor Signature: S. A **Dean Signature:**