Faculty of Computers and Information Technology

Computer Networks-2

Information :

Course Code :	DM323	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Digital Media Technology

Instructor Information :

Title	Name	Office hours
Lecturer	Mahmoud Abdel Moneam Mahdi Mahmoud	1
Teaching Assistant	Nadia Alaa Talaat Tawfik	

Area Of Study :

ÅUnderstand knowledge that enhances skills to learn different types of routing protocols.
ÅUse and adopt fundamental of data multicast and broadcast routing and internetworking.
ÅSolve problems of congestion for TCP and real time transport layer protocols.
ÅShow a complete understanding of main network applications such as E-Mail, Web browsing, and streaming audio/video.
ÅEvaluate different algorithms for network security such as private, public key algorithms and digital signature.
ÅComprehend deeply the basic concepts of hot topics in computer networks such as cellular, ad-hoc, vehicular and sensor networks.

Description :

Difference between LANs/MANs and WANs; Transmission media; LAN/MANs topologies: Bus; Tree; Ring; Star Protocol Architecture; Logical link control (LLC); Medium access control (MAC)-LLC Services; LLC Protocols; Flow control; Error control; Ethernet (IEEE 802.11, CSMA/CD); Frame Component ï MAC protocol ï 10 Mbps Ethernet ï 100 Mbps Ethernet ï Gigabit Ethernet; Token ring; Token priority ï Token Maintenance;. FDDI: Frame component ï Ring Maintenance; Internetworking: Bridge, Router

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Explain the principles and techniques of network security
2 -	Identify different services used in Application Layer such as E-mail, browsing and audio/video streaming
3 -	Discuss fundamental concepts related to routing mechanisms and congestion control
b.Intellectual Skills: :	
1 -	Classify wireless technologies used in cellular and ad-hoc networks.
2 -	Select appropriate quality of service parameters for different network applications
3 -	Propose a set of alternative solutions for congestion in TCP and real time transport layer protocols
4 -	Analyze different problems in static routing techniques and how dynamic routing solves these problems
c.Professional and Practical Skills: :	
1 -	Apply different soft skills by oral, written, presentations in discussing the network applications

2 -	Deploy OPNET or NS2 simulation tool to simulate routing protocols and evaluate congestion control methods
3 -	Apply effective information to implement some network security algorithms such as AES algorithm
d.General and Transferable Skills: :	
1 -	Apply communications skills in presentation and report writing for network applications
2 -	Work on a team to simulate routing protocols and congestion control methods

ABET Course outcomes :	
1 -	Demonstrate adequate understanding of basic concepts of different types of routing protocols.
2 -	Use and adopt fundamental of data multicast and broadcast routing and internetworking.
3 -	Solve problems of congestion for TCP and real time transport layer protocols.
4 -	Demonstrate adequate understanding of main network applications such as E-Mail, Web browsing, and streaming audio/video.
5 -	Evaluate different algorithms for network security such as private, public key algorithms and digital signature.
6 -	Demonstrate adequate understanding of the basic concepts of emerging advances in computer networks such as cellular, ad-hoc, vehicular and sensor networks.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Advanced Routing Algorithms: Flooding, Distance Vector and Link State Routing	4	2	2
Advanced Routing Algorithms: Hierarchical, Broadcast and Multicast Routing, and Internetworking	4	2	2
Congestion Control in Transport Layer: TCP Congestion Control and Real Time Transport Protocols	4	2	2
Application Layer: Electronic Mail and World Wide Web	4	2	2
Application Layer: Streaming audio and video	4	2	2
Network Security: Private, Public Key Algorithms and Digital Signature	4	2	2
Communication Security and Authentication Protocols	4	2	2
E-mail and Web security	4	2	2
Mid Term Exam	2		
Overview on Cellular Networks	4	2	2
Overview on Mobile Ad-Hoc Networks	4	2	2
Mobile IP and Vehicular Networks	4	2	2
Wireless Sensor Networks	4	2	2
Final Exam	2		

Teaching And Learning Methodologies :
Interactive Lectures including Discussions
Practical Lab Sessions
Self-Study (Project / Reading Materials / Online Material / Presentations)

Case Studies
Problem Solving

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	5.00	4	
Final Exam	40.00	14	
Midterm Exam (s)	20.00	9	
Practical Exam	10.00		
Presentations	5.00	12	
Quizzes	10.00	5	
Research and Reporting	5.00		
Team Work Projects	5.00		

Course Notes :

An Electronic form of the Course Notes and all the slides of the Lectures is available on the Students Learning Management System (Moodle)

Recommended books :

W. Stallings, Wireless Communications and Networks, Pearson, last edition. ISBN: 978-0131918351

Web Sites :

Computer Networks - Journal ï Elsevier
https://www.journals.elsevier.com/computer-networks