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	Hussein Mohamed Mohamed Ali Harb	4
Assistant Lecturer	MAHMOUD MAGDY MOHAMED ABDO	
Teaching Assistant	Debaj Shady Mahmoud Talha Mohamed Elmaghraby	

Area Of Study :

˝Understand knowledge that enhances skills to learn different types of routing protocols.
˝Use and adopt fundamental of data multicast and broadcast routing and internetworking.
˝Solve problems of congestion for TCP and real time transport layer protocols.
˝Show a complete understanding of main network applications such as E-Mail, Web browsing, and streaming audio/video.
˝Evaluate different algorithms for network security such as private, public key algorithms and digital signature.
˝Comprehend 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 . ÅMAC protocol . Ā₮€ÁMbps Ethernet . Á F€€ÁMbps Ethernet . ÁGigabit Ethernet; Token ring;   Token priority . ÁToken Maintenance;. FDDI: Frame component . Á Ring Maintenance; Internetworking: Bridge, Router

Course outcomes :

a.Knowledge and Understanding: :

1 -	Discuss fundamental concepts related to routing mechanisms and congestion control
2 -	Identify different services used in Application Layer such as E-mail, browsing and audio/video streaming
3 -	Explain the principles and techniques of network security

b.Intellectual Skills: :

1 -	Analyze different problems in static routing techniques and how dynamic routing solves these problems
2 -	Propose a set of alternative solutions for congestion in TCP and real time transport layer protocols
3 -	Select appropriate quality of service parameters for different network applications
4 -	Classify wireless technologies used in cellular and ad-hoc networks.

c.Professional and Practical Skills: :

1 -	Apply effective information to implement some network security algorithms such as AES algorithm

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2 -	Deploy OPNET or NS2 simulation tool to simulate routing protocols and evaluate congestion control methods
3 -	Apply different soft skills by oral, written, presentations in discussing the network applications

d.General and Transferable Skills: :

1 -	Work on a team to simulate routing protocols and congestion control methods
2 -	Apply communications skills in presentation and report writing for network applications

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 . Elsevier
https://www.journals.elsevier.com/computer-networks

http://www.fue.edu.eg