جامعـة الـزيتـونــة الأردنيــة
Al-Zaytoonah University of Jordan
كلية العلوم وتكنولوجيا المعلومات
Faculty of Science and IT

" عراقة وجودة"
"Tradition and Quality"

QF01/0408-4.0E	**Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Cyber Security Department**

Study plan No.	**2022/2021**			**University Specialization**		**Cyber security**	
Course No.	**0125131**			**Course name**		**Computer network(1)**	
Credit Hours	**3**			**Prerequisite/ Co-requisite**		**Introduction to Information Technology**	
Course type	☐ **MANDATORY UNIVERSITY REQUIREMENT**	☐ **UNIVERSITY ELECTIVE REQUIREMENTS**	☐ **FACULTY MANDATORY REQUIREMENT**	☐ **Support course family requirements**	√**Mandatory requirements**	☐ **Elective requirements**	
Teaching style	☐ **Full online learning**		√**Blended learning**		☐ **Traditional learning**		
Teaching model	☐ **1 Synchronous: 1 asynchronous**		√**1 face to face : 1 asynchronous**		☐ **2 Traditional**		

Faculty member and study divisions' information (to be filled in each semester by the subject instructor)
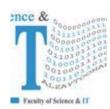
Name	Academic rank	Office No.	Phone No.	E-mail

Division number	Time	Place	Number of students	Teaching style	Approved model
				Blended learning	**1 face to face : 1 asynchronous**

Brief description

Introduction to computer networks, Networks Classification, Network Models, The Seven-Layer OSI Model Application Layer, Presentation Layer, Session Layer, Transport Layer, Network Layer, Data Link Layer, Physical Layer, Application Layer, Principles of Application-Layer Protocols, The World Wide Web: HTTP, Internet's Directory Service: DNS, transport layer services, multiplexing and Demultiplexing application, UDP,TCP, Principles of Congestion Control, routing principles, IP, IPv4, ICMP. Data link layer services, error detection and correction techniques, sliding window protocols, Multiple Access protocol and LANs, Link layer addressing and address resolution protocol ARP and local area network

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	Network+ Guide to Networks 8th Edition, 2019 by Jill West (Author), Tamara Dean (Author), Jean Andrews (Author)
Supportive learning resources (Books, databases, periodicals, software, applications, others)	1- James F. Kurose and Keith W. Ross, COMPUTER NETWORKING: A Top-Down Approach, Eighth edition, Pearson, 2020. 2.Computer Networks 5th By Andrew S. Tanenbaum (International Economy Edition) January 9, 2010Pearson Education, Inc., Prentice-Hall-Series, 2010. 3.Distributed Computer and Communication Networks, 18th International Conference, DCCN 2015, Moscow, Russia, October 19-22, 2015, Revised Selected Papers, Editors:

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	Vishnevskiy, Vladimir M., Kozyrev, Dmitry V. (Eds.)			
Supporting websites				
The physical environment for teaching	☐ √Class room	labs	☐ Virtual educational platform	☐ Others
Necessary equipment and software				
Supporting people with special needs				
For technical support				

Course learning outcomes (S = Skills, C= Competences K= Knowledge,)

No.	Course learning outcomes	The associated program learning output code
	Knowledge	
K1	**Understanding the basic concepts and techniques of Network.**	**MK3**
K2	**Understanding TCP/IP model and its protocols**	**MK3**
K3	**Explain the TCP/IP model and how it corresponds to the OSI model**	**MK3**
K4	**Explain specific functions belonging to each OSI model layer**	**MK3**
K5	**Understand how two network nodes communicate through the**	**MK3**
K6	**Explain basic data transmission concepts, including full duplexing, attenuation, latency, and noise**	**MK3**
	Skills	
S1	**Describe the purpose of the OSI model and each of its layers**	**MS2**
S2	**Explain specific functions belonging to each OSI model layer**	**MS2**
S3	**Discuss the structure and purpose of data packets and frames**	**MS2**
S4	**Compare the benefits and limitations of different networking media**	**MS2**
	Competences	
C1	**Describe how common Application layer TCP/IP protocols are used**	**MC2**

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm exam	30%	**30%**	40%	30%
Participation / practical applications	0	**0**	10%	30%
Asynchronous interactive activities	30%	**20%**	0	0
Final exam	40%	**50%**	50%	40%

Note 1: Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.

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Note 2: According to the Regulations of granting Master's degree at Al-Zaytoonah University of Jordan, 40% of final evaluation goes for the final exam, and 60% for the semester work (examinations, reports, research or any scientific activity assigned to the student).

Schedule of simultaneous / face-to-face encounters and their topics

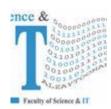| Week	Subject	learning style*	Reference **
1	Introduction to Networking Network Models Peer-to-Peer Network Model Client-Server Network Model Client-Server Applications -	Lecture	1-37
2	**Networking Standards and the OSI Model.** - **The OSI Model.** - Application Layer - Presentation Layer - Session Layer - Transport Layer - Network Layer - Data Link Layer - Physical Layer . . .	Lecture	39-52
3	**Transmission Basics and Networking Media** − Analog and Digital Signaling , Data Modulation − Simplex, Half-Duplex, and Duplex − Multiplexing − Relationships Between Nodes	Lecture	73-87
4	**Introduction to TCP/IP Protocols** − Characteristics of TCP/IP (Transmission Control Protocol/Internet Protocol) − The TCP/IP Core − TCP (Transmission Control Protocol) − UDP (User Datagram Protocol	Lecture	135-145
5	− IP (Internet Protocol) − ICMP (Internet Control Message Protocol) − IGMP (Internet Group Management Protocol)	Lecture	145-150

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	– ARP (Address Resolution Protocol **First Exam 20%**		
6	– **Application Layer Protocols** – FTP (File Transfer Protocol) – TFTP (Trivial File Transfer Protocol) – NTP (Network Time Protocol) – NNTP (Network News Transfer Protocol PING (Packet Internet Groper)	Lecture	168-173
7	**Topologies and Ethernet Standards** – **Simple Physical** – Bus , Ring and Star **Logical Topologies** **Hybrid Physical Topologies** – Star-Wired Ring – Star-Wired Bus	Lecture	193-200
8	– Backbone Networks – Serial Backbone – Distributed Backbone – Collapsed Backbone – Parallel Backbone. .	lecture	200-210
9	– **Switching** – Circuit Switching – Message Switching – Packet – MPLS (Multiprotocol Label Switching)	lecture	210-215
10	**Review of Previous Chapters** **MID Exam: 30%**	Lecture	
11	**Ethernet** – CSMA/CD (Carrier Sense Multiple Access with Collision Detection – Ethernet Standards for Copper Cable – Ethernet Standards for Fiber-Optic Cable – 10-Gigabit Fiber-Optic Standards .	Lecture	215-222
12	**Network Hardware** – NICs (Network Interface Cards	Lecture	237-255

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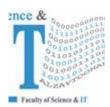|	– Types of NICs – Installing NICs. Choosing the Right NIC .		
13	**Switches** Switching Methods	**Lecture**	280-283 286-295
14	**Routers.** – Router Characteristics and Functions – Routing Protocols	**Lecture**	271-280
15	**Review of Previous Chapters** – **Discussions of Reports and Home Works:10%**		
16	**Final Exam 50%**		

* **Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.**
** **Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.**

Schedule of asynchronous interactive activities (in the case of e-learning and blended learning)

Week	Task / activity	Reference	Expected results
1	Fill in blanks, drag the words	Lectures 1 and 2	Understanding Client-Server Applications
2	Fill in blanks, drag the words	Lectures 3 and 4	The OSI Model
3	Fill in blanks, drag the words	Lectures 5 and 6	Understanding IP addressing
4	Fill in blanks, drag the words	Lectures 7 and 8	Understanding subnetting and supernetting
5	Assignment	Lecture 9 and 10	IP (Internet Protocol)
6	Assignment	Lecture 11 and 12	Application Layer Protocols
7	Assignment	Lecture 13 and 14	Understanding DHCP, ethernet and TCP handshake
8	Fill in blanks, drag the words	Lecture 15 and 16	Network Topologies
9	Assignment	Lecture 17 and 18	Understanding NAT and DNS
10	Fill in blanks, drag the words	Lecture 19 and 20	Understanding ICMP and SNMP
11	Assignment	Lecture 21 and 22	Ethernet CSMA/CD
12	Assignment	Lecture 23 and 24	Network Hardware
13	Assignment	Lecture 25 and 25	Understanding Network Hardware
14	Assignment	Lecture 25 and 25	
15	Discussion forum	Review lectures	Review final exam materials

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16	Final exam		