



**Course Syllabus**  
**According to JORDAN National Qualification**  
**Framework (JNQF)**

**Course Name: Computer Networks**

**Course Number: 06082140**

### General Course Information:

Course title	Computer Networks
Course number	06082140
Credit hours	3 hrs.
Education type	[Face-to-Face] 3
Prerequisites/corequisites	Computer Organization and Design 06052121
Academic Program	Computer Network systems
Program code	608
Faculty	Information Technology
Department	Computer Science
Level of course	2
Academic year /semester	2, 1
Awarded qualification	Bachelor
Other department(s) involved in teaching the course	CIS,CS,SE,CMS
Language of instruction	English
Date of production/revision	16/3/ 2022

### Course Coordinator:

Coordinator's name	Dr. Monther Tarawneh
Office No	4108
Office Phone extension number	2498
Office Hours	TBA
Email	mtarawneh@iu.edu.jo

### Other Instructors:

Instructor name	Dr. Monther Tarawneh	
Office No	4108	
Office Phone extension number	2498	
Office Hours	TBA	
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### Course Description (English/Arabic):

English	Logical and physical of computer networks, architecture and transmission alternatives. OSI-reference model, ALOHA protocol, CSMA protocols, LAN, IEEE standards and protocols (token ring, token bus and Ethernet), physical layer basics, data link layer, framing protocols, error detecting and correcting, routing algorithms, flow control, congestion control algorithms, personal computer networks.
Arabic	أفكار ومصطلحات ترسل البيانات والشبكات الحاسوبية والتصميم الفيزيائي والتصميم المنطقي للشبكات الحاسوبية ومعمارية الشبكات وأوساط نقل المعلومات المستخدمة في الشبكات الحاسوبية. النموذج المرجعي لنظم الربط المفتوحة وبروتوكول ALOHA وبروتوكولات CSMA وشبكات الحاسوب المحلية والمعايير القياسية وبروتوكولات IEEE (إشعار الحلقة Token Ring وإشعار الناقل Token Bus والإيثرنت Ethernet) وأساسيات الطبقة الفيزيائية وطبقة ربط البيانات وبروتوكولات الإطارات وكشف وتصحيح الأخطاء وخوارزميات تحديد المسارات والتحكم في جريان البيانات في الشبكات وخوارزميات التحكم بالازدحام في الشبكات. شبكات الحواسيب الشخصية.

**Textbook: Author(s), Title, Publisher, Edition, Year, Book website.**

Russell Scott, "Computer Networking: This Book Includes: Computer Networking for Beginners and Beginners Guide", Amazon Digital Services LLC - KDP Print US, 2019

**References: Author(s), Title, Publisher, Edition, Year, Book website.**

1. Behrouz A. Forouzan, "Data Communications and Networking", 5th Edition, McGraw Hill, 2008.
2. Data and Computer Networks, W. Stallings, Prentice Hall, sixth edition, 2000.
3. Kurose and Ross, Computer Networking, Addison Wesley (2008). ISBN 0-321-49770-8  
Peterson and Davie, Computer Networks A Systems Approach, 4th edition, Morgan Kaufmann (2008). ISBN 0-12574013-4.

**Course Educational Objectives (CEOs):**

1.	Describe the main computer network terminologies and classifications.
2.	Explain the principles and structure of IP addressing and the fundamentals Ethernet concepts, media, services and operations
3.	Perform basic configurations for routers and switches
4.	Implement IP addressing schemes and build a simple network.

**Intended Learning Outcomes (ILO's):**

	<b>Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:</b>	<b>Relationship to CEOs</b>	<b>Contribution to PLOs</b>	<b>Bloom Taxonomy Levels*</b>	<b>Descriptors**</b>
A	<b>Knowledge and Understanding:</b>				
A1	Describe terminologies, technologies, and classifications of computer network	1	1	1	K
A2	Explain the role of protocol layers and the requirements for designing network protocols	1	1	1	K
A3	Identify the fundamentals of Ethernet concepts such as media, services and operation	2	1	1	K
B	<b>Intellectual skills:</b>				
B1	Apply CISCO command-line interface(CLI) to perform basic router and switch configuration	3	2	2	S
C	<b>Subject specific skills:</b>				
C1	Design a simple network using routers and switch in the packet tracer	3,4	2,5	2,5	S,C
D	<b>Transferable skills:</b>				

D1	Describe the structure of IP address and the requirement for subnetting	2	2	2	S
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**\*Bloom Taxonomy Levels**

Level #	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

**\*\* Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.**

**Program Learning Outcome (PLOs):**

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the ( ) program will demonstrate:		Descriptors**		
		K	S	C
1	Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	✓		
2	Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.		✓	
3	Communicate effectively in a variety of professional contexts.			✓
4	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.			✓
5	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.			✓
6	Apply computer science theory and software development fundamentals to produce computing-based solutions. [CS]		✓	

**\*\* Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)**

**Weekly Schedule (please choose the type of teaching)**

**■ Face to Face**

- ☐ **Hybrid (2 Lectures Face – To – Face +1 Lecture Asynchronous)**
- ☐ **Hybrid (1 Lectures Face – To – Face +1 Lecture Asynchronous)**
- ☐ **Online (2 Lectures Synchronous +1 lecture Asynchronous)**

Week	First Hour (Face – To – Face)	Second Hour (Face – To – Face)	Third Hour (Face – To – Face)	Ach. ILOs	Ach. PLOs	DS**
1	Course Overview	<b>INTRODUCTION</b>	Assessment plans and Review	A1	1	K
2	Ch1: network Today: Network components, topologies and representations	Networks types internet connections reliable networks	Networks trends network security,	A1	1	K
3	Ch2: basic configuration: Packet tracer environment	Configure Initial Router Settings: hostname, console password, enable password, password encryption, Ports and Addresses	Saving configuration, banner messages. Lab practice Quiz 1	B1	2	S

4	Lab1. Continue	Ch3: Protocols and Models: the rules, protocols, protocols suite	Standard organization, data encapsulation, data access Lab practice	A2	1	K
5	Ch4: Physical Layer: Purpose of the Physical Layer,	Physical Layer Characteristics	Copper Cabling, UTP Cabling Fiber-Optic Cabling Lab practice	A3	1	K
6	Ch5: Data Link Layer: Purpose of the Data Link Layer,	Topologies	Data Link Frame Home work1	A1	1	K
7	Ch6: Ethernet Switching: Ethernet Frame, Ethernet MAC Address	The MAC Address Table, Switch Speeds and Forwarding Methods	Ch7: Network Layer: Network Layer Characteristics, Network Layer Characteristics, IPv6 Packet, How a Host Routes	A1	1	K
8	<b>Midterm exam</b>					
9	Ch8:Address Resolution: MAC and IP	ARP	Neighbor Discovery Lab practice	B1	2	S
10	Ch9: IPv4 Addressing: IPv4 Address Structure, IPv4 Unicast, Broadcast, and Multicast, Types of IPv4 Addresses	Network Segmentation  Subnet an IPv4 Network	Subnet a /16 and /8 Prefix Subnet to Meet Requirements, Variable Length Subnet Masking, Structured Design, IPv6 Addressing Lab practice Homework 2	D1	2	S
11	Ch9: Build a Small Network: Devices in a Small Network	Small Network Applications and Protocols, Scale to Larger Networks	Verify Connectivity, Troubleshooting Methodologies Lab practice	C1	2 5	S C
12	Practice	Practice	Practical Exam	B1	2	S
13	Ch 10: Transport Layer: Transportation of Data	TCP Overview, UDP Overview, Port Numbers, TCP Communication Process	Reliability and Flow Control, UDP Communication  Quiz2	A3	1	K
14	Ch11: Application Layer: Application, Presentation, and Session	Peer-to-Peer, Web and Email Protocols	IP Addressing Services, File Sharing Services Lab practice	A3	1	K
15	Final Review	Practical Review	Final Review			
16	<b>Final exam</b>					

\*\* DS (Descriptors) - K: Knowledge, S: Skills, C: Competency

## Teaching Methods and Assignments:

**Development of ILOs is promoted through the following teaching and learning methods:**

- **Interactive videos**
- **Practice Labs**
- **Discussion Forums**
- **Quizzes**
- **Other Interactive online activities**
- **Reports**

## Course Policies:

A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) **30%**
- Midterm **20%**
- Final Exam **50%**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**

### Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: <https://elearn.iu.edu.jo/>**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning
- Training

### Assessment Tools implemented in the course:

- Final Exam
- Midterm Exam
- Quizzes
- Homework
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:.....

### Responsible Persons and their Signatures:

Course Coordinator	<b>Dr. Monther Tarawneh</b>	Completed Date	<b>16 / 03 / 2022</b>
		Signature	
Received by (Department Head)	<b>Dr. Fiasal Alzoyoud</b>	Received Date	/ /
		Signature	