



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Computer Networks Fundamental		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CYS107			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		2
Administering Department	Dept. of Cybersecurity		College	College of Information Technology
Module Leader	Dr. Omar A. Hammood		e-mail	omer.abd@uofallujah.edu.iq
Module Leader's Acad. Title	Lect.		Module Leader's Qualification	Ph.D.
Module Tutor	Dr. Omar A. Hammood		e-mail	omer.abd@uofallujah.edu.iq
Peer Reviewer Name	Dr. Ahmad AlSabhany		e-mail	ahmad.alsabhany@uofallujah.edu.iq
Scientific Committee Approval Date	25-5-2026		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Learn about communication systems in general and learn about computer networks and their classifications. 2. Understand network architecture, OSI models, and TCP/IP. 3. Learn how to encode data to be transmitted over computer networks. 4. Learn how to route data through the Routing network and the protocols used in it.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. This course provides a technical and operational overview of digital computer networks, the foundation for all modern information systems and services. 2. It will learn about the major software and hardware technologies used on home and enterprise computer networks as well as the global Internet. 3. It will learn how information is encoded into digital packets, how it is transported across local networks like the one at SU, and how SU and other organizations interconnect over the Internet backbone. 4. This course will emphasize the critical importance of open network standards and protocols, which allow software and hardware from a variety of vendors to interoperate while also driving down the cost of network systems. 5. In addition to the exploring the capabilities a networks, including Ethernet, Wi-Fi, and Cellular, 6. related to networks.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	In a computer network course, students will learn strategies to know the basic concepts of communications and computer networks, and identifies their basics, benefits, shapes, architectures, layers, functions, and possible services, in addition to how to network them.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	72	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Assignments	2	10% (10)	5 and 10	All
	Quiz	1	10% (10)	4	LO #1 - #3
	Quiz	1	10% (10)	9	LO #4 - #7
	Report	1	10% (10)	13	LO #7 - #9
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	General concepts of communication: Communications between devices and components of the communication system and protocols.
Week 2	General concepts about networks: Definition of networks, types of connectivity, protocols and standards.
Week 3	Network models General study of network models (OSI and Internet models).
Week 4	Learn about more network models A detailed study of the layers of network models.
Week 5	Study of the physical layer Study data and digital and analog signals.
Week 6	Learn more about the physical class Signals and communications, digital and analog transmissions and specifiers.
Week 7	Studying the data link layer Study the tasks and work of the data link layer.
Week 8	Learn more about the data link layer Error detection and correction, framing, transmission and error control.
Week 9	Network layer study Study the functions and work of the network layer.
Week 10	Learn more about the network layer Addressing, networking, routing concepts.
Week 11	Learn more about the network layer Routing, routing table components, routing algorithms.
Week 12	Transport layer study Study the tasks and work of the transport layer.
Week 13	Learn more about the transport layer Transport layer protocols, congestion control, and quality of service.
Week 14	Learn about cables and their types Study the types of cables and compare them and their uses.

Week 15	Learn about devices and how to connect the network Connecting networks using cables, routers and switches.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Experiment#1 Intro to Networking & OSI Layers (Packet Tracer tour and physical component identification)
Week 2	Experiment#2 Physical & Data Link Layers (Ethernet frame analysis and MAC address table viewing)
Week 3	Experiment#3 RJ-45 Cabling & Hands-on Crimping (Making and testing UTP cables (T568A/B))
Week 4	Experiment#4 Network Layer: IPv4 & Troubleshooting (Configuring IPs, using Ping and Traceroute)
Week 5	Experiment#5 Subnetting: Manual & VLSM Planning (Designing subnets for campus networks (Admin, HR, IT))
Week 6	Experiment#6 Router Fundamentals & Basic CLI (Initial setup: hostnames, passwords, and interface IPs.)
Week 7	Experiment#7 Discovery & Remote Access (Configuring CDP/LLDP and Telnet/SSH access)
Week 8	Midterm Exam (Assessment of Weeks 1–7)
Week 9	Experiment#8 Switching I: MAC Tables & VLANs (Creating VLANs and assigning ports)
Week 10	Experiment#9 Switching II: Trunking & Inter-VLAN
Week 11	Experiment#10 Redundancy: EtherChannel (Configuring LACP)
Week 12	Experiment#11 Switch Security & Port Security
Week 13	Experiment#12 IP Routing: Static & Default Routes(Manual routing table configuration and verification)

Week 14	Experiment#13 Dynamic Routing: RIP v1 (Multi-router RIP configuration and debugging)
Week 15	Experiment#14 OSPF Routing: Single & Multi-Area (Configuring OSPF areas and viewing neighbors)

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Data communications and Networking, BEHROUZ A FOROUZAN, FIFTH Edition	Yes
Recommended Texts	Data and Computer Communications, William Stallings, EIGHTH Edition	Yes
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				