MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Computer Network Fundamentals			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☐**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	UOMU02**0**2061				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	3		**Semester of Delivery**	6	
Administering Department	CET		**College**	EETC	
Module Leader	Ahmed janabi		e-mail	ahmed.janabi@uomus.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	29/10/2023		**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 Aims أهداف المادة الدراسية	1. Understand the Basics of Networking: The module aims to provide students with a solid foundation in the fundamental concepts, principles, and components of computer networking. 2. Understand the purpose and importance of computer networks, network architectures, and network protocols. 3. Explore Network Infrastructure: The module aims to familiarize students with different types of networks, such as Local Area Networks (LANs) and Wide Area Networks (WANs). 4. Explore various network devices and technologies used in building and managing networks. 5. Network Addressing and Subnetting Skills: The module aims to enable students to comprehend IP addressing, subnetting, and related concepts. 6. Network Standards and Protocols: The module aims to introduce students to network standards and protocols established by organizations such as IEEE, IETF, and ISO
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain the data communications, networking, protocols and standards, and networking models and how to create a data flow. 2. Understand the Data communications between remote parties can be achieved through a process called networking. 3. Understand the fundamental concepts and principles of computer networks, including network architectures, protocols, and models (such as OSI and TCP/IP). 4. Identify and describe the different network components and their functions, including routers, switches, firewalls, access points, and network cables. 5. Explain the relationship between data, which are created by a device, and electromagnetic signals, which are transmitted over a medium. 6. Explain the basics of network addressing, including IP addressing, subnetting, and the use of subnet masks. 7. Demonstrate knowledge of commonly used network protocols, such as IP, TCP, UDP, ICMP, and DNS, and understand their roles in network communication. 8. Analyze and describe different network topologies and architectures, including star, bus, ring, and mesh networks. 9. Understand the fundamentals of network security, including common threats, encryption techniques, firewalls, and best practices for securing

	networks. 10. Configure and troubleshoot basic network settings, including IP addressing, subnetting, and network connectivity. 11. Explain the importance of network standards and protocols in ensuring interoperability and compatibility in network environments. 12. Demonstrate an understanding of network performance factors and techniques for optimizing network performance, including bandwidth management and Quality of Service (QoS) implementation. 13. Apply critical thinking and problem-solving skills to analyze and troubleshoot common network issues, such as network connectivity problems and network performance degradation. 14. Work effectively as a team member in network-related activities, demonstrating communication and collaboration skills. Demonstrate practical skills in configuring and managing network devices, such as routers, switches, and wireless access points.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. introduction to Computer Networks**: 6 hrs** Definition and purpose of computer networks **: 6 hrs** Network types and topologies **: 6 hrs** Network components and their functions **: 6 hrs** Network models: OSI and TCP/IP : **: 12 hrs** Network Devices and Infrastructure **: 6 hrs** Routers, switches, and hubs **: 6 hrs** Network interfaces and media **: 6 hrs** Network cables and connectors **: 6 hrs** Network architectures: LAN, WAN, MAN **: 6 hrs** Network Addressing and Subnetting : **6 hrs** IPv4 and IPv6 addressing **: 6 hrs** Subnet masks and subnetting techniques **: 6 hrs** IP address allocation and management **: 4 hrs**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب موزع على (15) اسبوع			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.26
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (5)	3, 11	LO #1, 2, LO# 3-10
	Assignments	2	10% (5)	4, 12	LO# 1-3, LO# 3-11
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	15	LO # 1-13
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Networking, definition and purpose of computer networks
Week 2	Basic Concepts of Networking, Line configuration
Week 3	Transmission MOD
Week 4	Categories of Networks
Week 5	The OSI Model ,data protocol unit
Week 6	Main functions of the OSI Layers, TCP/IP Protocol Suite , IP address concept.
Week 7	**Midterm Exam**
Week 8	classes
Week 9	Subnetting
Week 10	Networking and Internetworks Devices
Week 11	Guided Transmission Media
Week 12	Unguided Transmission media
Week 13	Multiplexing technique
Week 14	FDM,TDM, and CDM
Week 15	Relationship between data, which are created by a device, and electromagnetic signals, which are transmitted over a medium.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Network ,Familiarization with the lab environment and tools
Week 2	Lab 2: Introduction to Networking Equipment familiarization with network devices such as routers, switches, and hubs.
Week 3	Lab 3: Connecting and configuring network devices.
Week 4	Lab 4: Network Cabling and Connections
Week 5	Lab 5: Configuring and troubleshooting Ethernet connections

Week 6	Lab 6: IP Addressing and Subnetting , assigning IP addresses to network devices.
Week 7	Lab 7: Network Configuration and Troubleshooting

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	" TCP/IP Protocol Suite" Fourth Edition Behrouz A. Forouzan	NO
Recommended Texts	"Data Communications and Networking", Fourth Edition by Behrouz A. Forouzan	No
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.