

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	CET3202			
ECTS Credits	6			
SWL (hr/sem)	180			
Module Level	3	Semester of Delivery		6
Administering Department	CET	College	EETC	
Module Leader	Ammar Alauldeen Abdulmajeed		e-mail	Ammar.all@mtu.edu.iq
Module Leader's Acad. Title	Assistant Lecturer		Module Leader's Qualification	master
Module Tutor	Ali Nafaa Gaafar		e-mail	ali_nafaa@mtu.edu.iq
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Scientific Committee Approval Date	13/06/2023	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.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	88	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	180		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	5% (5)	3, 11	LO #1, 2, 9 and 10
	Assignments	2	5% (5)	2, 12	LO # 4, 5, 6, 7 and 8
	Projects / Lab.	1	5% (5)	Continuous	
	Report	1	5% (5)	15	LO # 13 and 14
Summative assessment	Midterm Exam	2 hr	30% (10)	7	LO # 1-8
	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
Week 7	TCP/IP Protocol Suite
Week 8	IP address concept, 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.
Week 16	Preparatory week before the final Exam

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.