	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Advanced Technologies Department of Digital health technologies	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	Network fundamentals		**Module Delivery**	
Module Type	C		☐Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	DHTC102			
ECTS Credits	6.00			
SWL (hr/sem)	150			
Module Level			**Semester of Delivery**	
Administering Department	Digital health technologies		**College**	College of Advanced Technologies
Module Leader	براء عدنان كاظم		**e-mail**	
Module Leader's Acad. Title	مدرس مساعد		**Module Leader's Qualification**	Master's Degree in Electronics and Communications Engineering / Communication Networks
Module Tutor			**e-mail**	

Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	NA	**Semester**	
Co-requisites module	NA	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The "Computer Networks" course aims to provide undergraduate students with a strong foundation in networking fundamentals. The course begins with an introduction to networks and gradually delves into the application and transport layers. Through a combination of theoretical knowledge and practical applications, the course aims to enable students to understand the principles, protocols, and functions of networking fundamentals. By the end of the course, students should be able to analyze network requirements, design appropriate solutions, implement network services, and diagnose common problems in the application and transport layers. Furthermore, the course aims to foster critical thinking and problem-solving skills, and an understanding of best practices for securing computer networks. Ultimately, the course seeks to prepare students for professional roles in network administration, network engineering, and related fields by equipping them with the necessary knowledge and skills in computer networking fundamentals..
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Understanding the fundamental concepts and principles of computer networks. Analyzing and explaining the functions and protocols of the application and transport layers. Evaluating network requirements and designing appropriate solutions for different scenarios. Implementing and configuring network services and protocols at the application and transport layers. Diagnosing and troubleshooting common network problems at the application and transport layers. Applying best practices for securing computer networks at the application and transport layers..
Indicative Contents المحتويات الإرشادية	Introduction to Networking: An overview of computer networks and their importance in modern IT architecture. Network topologies, protocols, and standards. Network architectures: client-server, peer-to-peer, hybrid. Network components: routers, switches, hubs, and

	cables. Application Layer. Transport Layer: An overview of the transport layer and its role in reliable data delivery. Transport layer protocols: TCP and UDP. Flow control, congestion control, and error detection techniques.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lectures: Classroom lectures will be given to introduce and explain the fundamental concepts, theories, and principles of computer networks. These lectures will include real-world examples and case studies to enhance understanding. Practical Sessions: Practical sessions will provide hands-on experience in configuring and managing computer networks. Students will have the opportunity to work with network equipment, simulate networks, and troubleshoot network problems. Group Discussions: Group discussions will encourage students to analyze and discuss network concepts and protocols. This will contribute to learning and the exchange of ideas among students. Case Studies and Projects: Students will be assigned presentations and research projects on the topics covered and topics of their choice, as outlined in the curriculum. This will help develop their problem-solving skills and deepen their understanding of network concepts. Assessments: Assessments will include individual and group assignments, practical exercises, quizzes, and exams. These assessments will evaluate students' understanding of concepts, their ability to apply knowledge, and their skills in analyzing and troubleshooting network problems.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	46	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem)	104	**Unstructured SWL (h/w)**	2

الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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**	5	5 % (5)	2,5,8,10,13	LO # 1, 4, 5, 7,8
	Assignments	5	5 % (5)	1,4,7,11,15	LO # 1-15
	Lab.	10	10 % (10)	1-9	LO # 1-15
	Report	10	10 % (10)	1-8	LO # 1-15
Summative assessment	**Midterm Exam**	3 hr.	20 % (20)	9	LO # 1-15
	Final Exam	3 hr.	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	انواع ربط الشبكات +مقدمة في اساسيات الشبكات
Week 2	TCP/IP model + OSI model + network topologies
Week 3	IP address
Week 4	subnetmask + MAC address
Week 5	Network devices
Week 6	switching + routing +ARP
Week 7	Transport Layer
Week 8	TCP vs UDP + Ports & Sockets
Week 9	Application Layer
Week 10	Protocols: • HTTP • FTP • SMTP
Week 11	DHCP
Week 12	P2PوDNS
Week 13	Demultiplexing & Multiplexing

Week 14	General review
Week 15	Before the final exam
Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to the Laboratory Identifying Basic Network Components Using Basic Network Commands
Week 2	Network Cables and Connectors Types of Network Media (UTP, Fiber, Wireless) Cable Identification and Usage
Week 3	Network Devices Overview Hub, Switch, Router Identifying Device Ports and Functions
Week 4	eek 4 – Laboratory IP Addressing Basics IPv4 Address Structure Identifying Network ID and Host ID
Week 5	Subnet Mask Basics Simple Subnetting Exercises IP Configuration Practice
Week 6	Using Network Commands: ipconfig ping tracert Testing Network Connectivity
Week 7	Introduction to Packet Tracer Building a Simple Network Topology Connecting Devices in Simulation
Week 8	Configuring IP Addresses in Packet Tracer Testing Connectivity Between Devices Troubleshooting Simple Network Errors
Week 9	Installing Wireshark Software Starting a Basic Capture Observing ICMP Packets
Week 10	Analyzing a Complete HTTP Session
Week 11	Configuring DHCP in a Lab Network Using nslookup Commands
Week 12	Using a Simple Network Monitoring Too
Week 13	Network Management Exercises
Week 14	Review

Week 15	FINAL EXAM

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	James F. Kurose and KeithW. Ross. Computer Networking: A Top-Down .Approach, Eighth edition, 2020 L. L. Peterson and B. S. Davie. Computer Networks, A Systems Approach. Morgan Kaufman, Fourth edition, .2006 ,A. S. Tanenbaum. Computer networks. Prentice-Hall Fifth edition, 2010	

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.

رئيس القسم

التاريخ :

استاذ المادة: م.م. براء عدنان كاظم

التاريخ: 2026/1/22