	Ministry of Higher Education and Scientific Research - Iraq University of Technology Department of Computer Science Networks Management Branch	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**NETWORK PROTOCOLS**			**Module Delivery**	
Module Type	BASIC			**-Theory Lecture** **-Lab** **-PracticalSeminar**	
Module Code	**NEPR215**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	1	
Administering Department	Department of Computer Science		**College**	Computer Science	
Module Leader	Dr. Asia Ali Salman		**e-mail**	asia.a.alkarkhi@uotechnology.edu.iq	
Module Leader's Acad. Title	**Assist prof.**		**Module Leader's Qualification**	**PhD.**	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**		

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Principles of Networks**	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	• provide students with the knowledge and skills necessary to design, implement, and troubleshoot network systems. • booster a deep understanding of how network protocols work and interact with each other. • Enable students to analyze network performance and optimize communication efficiency. • Prepare students for careers in networking, systems engineering, or related fields.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• **Define** and **explain** key terms and concepts related to network protocols, such as layers, addressing, routing, flow control, error control, and multiplexing. • **Understand** the role of protocols in enabling reliable and efficient communication across different networks. • **Analyze** the relationship between different layers of the OSI model and how protocols operate at each layer.
Indicative Contents المحتويات الإرشادية	**Fundamental Concepts** **Introduction to networking,**Components of a network,Network topologies Network protocols,**OSI model,**Layers of the OSI model,Functions of each layer Relationship between layers **Data Link Layer,Ethernet,**Ethernet frame structure,CSMA/CD protocol Ethernet switches and hubs,**Point-to-Point protocols,**PPP, **Network Layer,IP addressing,**IPv4 and IPv6 addressing,Subnetting,Classful and classless addressing,**Routing protocols,**RIP,OSPF,BGP,**ICMP,**ICMP message **Transport Layer,TCP,**Connection-oriented protocol,Flow control,Congestion control,**UDP,**Connectionless protocol,Applications of UDP **Application Layer,HTTP,**HTTP requests and responses,**FTP,SMTP,**Simple mail transfer protocol,**DNS(**Domain name system)
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Effective learning and teaching strategies for a network protocols module can significantly enhance students' understanding and retention of the course material. Using different approaches Lectures: Use lectures to introduce key concepts, provide theoretical explanations, and offer guidance on the course material. Discussions: Encourage class discussions to enhance critical thinking, problem-solving among students. Simulations: Use network simulation tools to create virtual environments where students can practice configuring and troubleshooting network protocols. Group projects: Assign group projects that require students to work together to design, implement, and analyse network solutions.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	10% (10)	5	LO # 1 and 3
	Practical Seminar(Lab)	2	15% (15)	Continuous	LO # 2 , 4 and 5
Summative assessment	**Midterm Exam**	1 hr	15% (15)	14	LO # 1 to 5
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Overview network protocols concepts: **Physical Layer** • EIA/TIA-232 • EIA/TIA-449 • TU-T-V-Series • DSL • **Comparision between OSI model /TCP-IP protocol suite**
Week 2	• IEEE 802.3 • IEEE 802.11 • IEEE 802.15 • IEEE 802.16 • BLUETOOTH
Week 3	• Network Layer • IP (V4, and V6) • The IP datagrams (ipv4) • IP addressing (ipv4) •

Week 4	• Class-based addresses • IP Mask
Week 5	• Subnetting (subnets+ valid hosts addresses) • Classless
Week 6	• Network address translation (NAT): • VLSM • CIDER
Week 7	• IPv6 fundementals
Week 8	• Network layer protocols (IPX/ISX, IPsec) • Transport layer.
Week 9	• Application layer protocols.
Week 10	• Data link layer protocol. • CDMACD/CDMACA
Week 11	• Transport layer protocols(TCP/UDP
Week 12	• transport layer extra algorithms
Week 13	• Differences between workstation and domains • Discuss the protocols in different layers
Week 14	Preparatory Week
Week 15	Mid Term Exam
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	➢ Getting Started with Packet Tracer • Protocols supported by Packet Tracer • Installing Packet Tracer • Windows • Interface overview • Creating a simple topology
Week 2	➢ Network Devices • Cisco devices and Packet Tracer devices • Routers • Switches • Other devices • Customizing devices with modules • Naming convention • Creating a custom device
Week 3	• Emulating WAN • Accessing the CLI • The CLI tab

	• The Console port • Configuring network devices • Global settings • Routing • The VLAN Database • Interface settings
Week 4	➢ Desktops and laptops • Servers • HTTP • DHCP • TFTP • DNS • SYSLOG • AAA
Week 5	• NTP • EMAIL • FTP • Firewall/IPv6 Firewall
Week 6	• Other end devices • Configuring end devices • IP Configuration • Dial-up • Terminal • Command Prompt • Web Browser • PC Wireless • VPN • Traffic Generator
Week 7	• MIB Browser • Cisco IP Communicator • E Mail • PPPoE Dialer • Text Editor
Week 8	➢ Creating a Network Topology • Connecting devices • Link status • Testing connectivity with PDUs • Simple PDU • Complex PDU • Using the simulation mode • Clustering a topology
Week 9	• Navigating and Modifying the Physical Workspace • Creating cities, offices, and wiring closets • Moving devices physically
Week 10	• Managing cables and distances • Cable distances • Cable manipulation • Customizing icons and backgrounds

Week 11	• analyse the performance of various configurations and protocols in LAN
Week 12	• Implementing an IP Addressing Scheme
Week 13	• Implement different network topology
Week 14	Quizz
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	"Network Protocols Handbook", 2nd Edition, Javvin Technologies Inc, 2005	
Recommended Texts	Forouzan: Data Communications and Networking, Fourth edition, TMH .	
Websites		

APPENDIX

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB 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.