

Detailed Course Description - Course Plan Development and Updating Procedures/ Computer Science/Computer Network Department	QFXX/0408-3.0E
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Faculty	Faculty of Science and IT	Department	Computer Science/Computer Network
Course number	0122481	Course title	Networks Monitoring & Documenting
Number of credit hours	3	Pre-requisite/co-requisite	Network Management

Brief course description
This course covers standard information that a network administrator can use to monitor, analyze, and troubleshoot a group of distributed local area networks (LANs) and interconnecting T-1/E-1 and T-2/E-3 lines from a central site. The course emphasizes "learning by doing", and requires students to conduct a series of lab exercises. Through these labs, students can enhance their understanding of the principles, and be able to apply those principles to solve real problems.

Course goals and learning outcomes	
Goal 1	An ability to understand the need for network monitoring, and understanding fundamentals of network monitoring
Learning outcomes	1.1 Define network monitoring 1.2 Explain the functions of network monitoring 1.3 Explain the types of measurement 1.4 Understand concepts and terminology associated with common metrics for measuring network performance.
Goal 2	An ability to understand and explain RMON and SNMP
Learning outcomes	2.1 Describe SNMP and its models 2.2 Understand and explain how to monitor a network remotely from a centralized network operations center (NOC) and perform fault monitoring. 2.3 Discuss monitoring systems and tools 2.4 Compare between RMON and Wireshark
Goal 3	An ability to describe and apply network monitoring tools for monitoring a network
Learning outcomes	3.1 Understand and apply simple network monitoring tools 3.2 Understand and discuss the foundation of passive and active network monitoring tools 3.3 Compare between passive and active monitoring tools 3.4 Apply Wireshark to capture and analyze network traffic
Goal 4	An ability to apply network monitoring tools in order to analyze the collected network traffic and to be able to detect and correct network problems
Learning outcomes	4.1 Describe and explain Wireshark tool 4.2 Apply Wireshark to filter, inspect, analyze and troubleshoot networks. 4.3 Apply iNetMON tool for monitoring network performance and generating reports 4.4 Evaluate the performance of network by the tools.
Textbook	1-Charit Mishra, Mastering Wireshark, 1st edition, 2016, Packt Publishing 2-Subramanian, Network Management: Principles and Practice, second edition, 2010, Pearson.
Supplementary	1-Ed Wilson, Network Monitoring and Analysis: A Protocol Approach to

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references	Troubleshooting,2000, Prentice-Hall. 2-Chris Chapman, Network Performance and Security: Testing and Analyzing Using Open Source and Low-Cost Tools,2016, Elsevier. 3- Research paper and internet resources
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Course timeline				
Week	Number of hours	Course topics	Pages (textbook)	Notes
01	1 1 1	Introduction to network monitoring The goals of network monitoring Network indicators measurement	Internet resources	
02	1 1 1	Passive and active monitoring Common metrics of network performance	Research papers and internet resources	
03	1 1 1	Simple network management protocol and its versions Management information base SNMP communication	Internet resources	
04	1 1 1	Monitoring tools Simple monitoring tools	Internet resources	
05	1 1 1	Passive monitoring Combinational monitoring	Research papers	
06	1 1 1	Introduction to Wireshark introduction to packet analysis with Wireshark Capturing methodologies	1-24, textbook(1)	
07	1 1 1	Introduction to filter: Capture filters Display filters	27-41, textbook(1)	
First exam				
08	1 1 1	Searching for packets using the find dialog Create new Wireshark profile	42-52, textbook(1)	
09	1 1 1	Mastering the advance features of Wireshark: The statistics menu Conversations Endpoints	53-73, textbook(1)	

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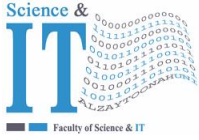
		Working with IO, Flow, and TCP stream graphs		
10	1	Inspecting application layer protocols	91-126, textbook(1)	
	1	Domain name system		
	1	File transfer protocol		
	1	Hypertext transfer protocol Simple mail transfer protocol		
11	1	Analyzing Transport Layer Protocols	127-152, textbook(1)	
	1	The transmission control protocol		
	1	The User Datagram Protocol		
12	1	Troubleshooting	231-262, textbook(1)	
	1	Recovery features		
	1	Second exam		
13	1	Remote network monitoring, RMON	390-417, textbook(2)	
	1	RMON1 and RMON2		
	1			
14	1	iNetMon portable	Internet resources	
	1	Network analyzer		
	1	Network trace		
15	1	Network address book	Internet resources	
	1	The visualization engine		
	1	Reporting toolkit		
16	1			
	1	Final exam		
	1			

Theoretical course evaluation methods and weight	Participation = 10% First exam 20% Second exam 20% Final exam 50%	Practical (clinical) course evaluation methods	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%
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Approved by head of department		Date of approval	
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Extra information (to be updated every semester by corresponding faculty member)

Name of teacher	Dr. Zeyad Mohammad	Office Number	314
Phone number		Email	Z.Dosooq@zuj.edu.jo



جامعة الزيتونة الأردنية
AI-Zaytoonah University of Jordan
كلية العلوم وتكنولوجيا المعلومات
Faculty of Science and Information
Technology



"عراقة وجودة"
"Tradition and Quality"

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(extension)			
Office hours	Sun, Tue, Thu (11:00-12:00) Mon, Wed (9:30-10:30, 12:30-13:00)		