

شعار الكلية

جامعة الزيتونة الأردنية  
 Al-Zaytoonah University of Jordan  
 ..... كلية  
 Faculty of .....



"عراقة وجودة"

"Tradition and Quality"

Detailed Course Description - Course Plan Development and Updating Procedures/ Computer Science Department	QF01/0408-3.0E
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Faculty	Faculty of Science and IT	Department	Computer Science
Course number	0122483	Course title	Voice over IP
Number of credit hours	3	Pre-requisite/co-requisite	Networks Monitoring & Documenting

**Brief course description.**

Voice over Internet Protocol (VoIP) is a technology that makes it possible for users to make telephone calls over the internet or intranet networks. The technology does not use the traditional Public Switched Telephone Network (PSTN); instead, calls are made over an internet protocol data network. VoIP has great benefits of increased saving, high quality voice and video streaming and several other added value services.

This course provides-

The foundation for understanding the key issues associated with voice over IP (VOIP), Understand how VoIP works, common misconceptions about it, and the pros and cons for the organizations

Compare and comprehend hardware and software choices

Discover the options for touch-tones and faxing via VoIP systems

Analyze network devices, IP addresses, connections to remote sites, and other aspects that will affect VoIP implementation

	Course goals and learning outcomes
Goal 1	Discusses what would be known as the traditional telephony world. It begins where the telephone system originally started analog connectivity. It then moves into the realm of digital connections
Learning outcomes	1.1 discusses the simplest type of modern voice communication, analog connections 1.2 discusses the process of converting analog voice into digital signals and using digital circuits to send multiple calls over a single line. 1.3 discusses the components of the PSTN, focusing specifically on PBX and Key Systems, and methods used to connect to the PSTN.
Goal 2	Categorized and described the components of a Cisco VoIP network By breaking down the voice infrastructure into four distinct areas.



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Learning outcomes	2.1. Learn the Cisco VoIP Structure and the standard methods of connecting and communicating across data networks. 2.2 understand the functions of Cisco VoIP Structure layers
<b>Goal 3</b>	Preparation and base configuration of the LAN infrastructure to support VoIP devices. This preparation includes support for Power over Ethernet (PoE), voice VLANs, a properly configured DHCP scope for VoIP devices, and the Network Time Protocol (NTP).
Learning outcomes	3.1. Connecting and Powering Cisco IP Phones. Discusses the different options for PoE and the selection criterion of each. 3.2 understand VLAN Concepts and Configuration 3.3. Understanding Cisco IP Phone Boot Process 4.4 Configuring a Router-Based DHCP Server and Setting the Clock of a Cisco Device with NTP
<b>Goal 4</b>	get Cisco Unified Communication Manager Express (CME) ready to support IP phones
Learning outcomes	4.1 learn the Installing Unified CME on a Cisco Router 4.2 understand the Configuring of the Cisco Unified CME Router as a TFTP Server: 4.3 <b>be able to Configuring the Cisco Unified CME System-Level Functions</b>
<b>Goal 5</b>	Create and assign directory numbers to Cisco IP phones. In addition, to the configuration of IP phone auto-registration, which makes your initial network setup much easier
<b>Learning outcomes</b>	5.1 understand and be able to provides a quick review of the foundation that must be in place to allow for a working IP telephony environment. 5.2 able to know the process to create and assign directory numbers to Cisco IP phones 5.3 Learn Additional IP Phone Configuration Parameters
<b>Textbook</b>	1.- <b>Textbook:</b> CCNA Voice Official Exam Certification Guide <b>Jeremy Cioara, CCIE No. 11727; Michael J. Cavanaugh, CCIE No. 4516; Kris A. Krake, CCIE No. 10229 Copyright© 2009 Cisco Systems, Inc.</b>
<b>Supplementary references</b>	1. - CCNA voice study guide (640-460) / Andrew Froehlich. — 1st ed. p. cm ISBN-13: 978-0-470-52766-5 ISBN-10: 0-470-52766-8 2.- Voice over IP Fundamentals (2nd Edition) by Jonathan Davidson, James Peters, Manoj Bhatia Satish Kalidindi, Sudipto Mukherjee. Publication Date: August 6, 2006   ISBN-10: 1587052571   3.- Switching to VoIP By Theodore Wallingford Publisher: O'Reilly Media Released: June 2005 Print ISBN:978-0-596-00868-0   ISBN 10:0-596-00868-6



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Course timeline				
Week	Number of hours	Course topics	Pages (textbook)	Notes
01	1	Where It All Began: Analog Connections, Loop Start and Ground Start Signaling. Supervisory Signaling	8,9,11	
	1	Informational Signaling, Address Signaling,	11,12	
	1	The Evolution: Digital Connections Converting Analog to Digital Signals	13	
02	1	Sending Multiple Calls over a Single Line, Understanding the PSTN	16, 21	
	1	Understanding PBX and Key Systems, Connections to and Between the PSTN,	23	
	1	PSTN Numbering Plans	25	
03	1	VoIP: Why It Is a Big Deal for Businesses, The Cisco VoIP Structure	35	
	1	Infrastructure Layer, Call Processing Layer	36	
	1	Applications Layer	40	
04	1	Endpoints Layer	45	
	1	Review the chapter		
	1	Introduction to packet tracer		
05	1	Connecting and Powering Cisco IP Phones, Cisco Catalyst Switch PoE	60	
	1	Powering the IP Phone with a Power Brick	67	
	1	Review the chapter		
06	1	VLAN Concepts and Configuration	68	
	1	VLAN Concepts and Configuration continue		
	1	<b>First Exam</b>		
07	1	VLAN Concepts and Configuration continue	74	
	1	VLAN Concepts and Configuration continue	84	
	1	VLAN Concepts and Configuration continue		
08	1	Configure Routing Between VLAN	86	
	1	Configure Routing Between VLAN		
	1	Configure Routing Between VLAN continue		
09	1	Understanding Cisco IP Phone Boot Process	92	
	1	Configuring a Router-Based DHCP Server	92	
	1	Setting the Clock of a Cisco Device with NTP	94	



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10	1	Cisco Unified Communications Manager Express Overview	105	
	1	Licensing and Models for Cisco Unified CME	111	
	1	Installing Unified CME on a Cisco Router	115	
11	1	Installing Unified CME on a Cisco Router continue	115	
	1	Configuring the Cisco Unified CME Router as a TFTP Server	118	
	1	<b>Second Exam</b>		
12	1	Configuring the Cisco Unified CME System-Level Functions	120	
	1	Configuring the Cisco Unified CME System-Level Function continue		
	1	Source IP Address Information	125	
13	1	<b>Generated Configuration Files</b>	126	
	1	Generated Configuration Files continue		
	1	Basic CME IP Phone Configuration	134	
14	1	Review the configuration for VLAN, DHCP, TFTP	138	
	1	Ephone and Ephone-DN—The Keys to Ringing Phones	140	
	1	Understanding and Configuring Ephone-DNs	141	
15	1	Understanding and Configuring Ephones	143	
	1	Associating Ephones and Ephone-DNs	145	
	1	Quality of service (QOS)		
16	1	Review project		
	1	<b>Final Exam</b>		
	1			

<b>Theoretical course evaluation methods and weight</b>	Participation = 10% First exam 20% Second exam 20% Final exam 50%	<b>Practical (clinical) course evaluation methods</b>	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	Marzooq Al-maitah	Office Number	321
Phone number (extension)	418	Email	<a href="mailto:marzoq@zuj.edu.jo">marzoq@zuj.edu.jo</a>
Office hours			