CEN 317

Computer Networks and Data Communication

Term 2 (2013-2014)

Course Profile

All details in this course profile for CEN 317 have been officially approved by CCIS – Majmah University and represent a learning partnership between the University and you (our student). The information will not be change unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

OVERVIEW

A computer network is a system of interconnected computers and peripheral device. Communications is about the transfer of information from a sender, across a distance, to a receiver. This course introduces the following concepts

- To explore the concept of Open Systems, giving an overview of Layers and Protocols.
- To familiar with the electrical interface and the basics of digital data transmission.
- To give an introduction to the area of computer networks, with emphasis on the range of communication protocols utilized.
- To introduce the concept of communication protocols and give an overview of Data Communication Standards.
- To provide a good understanding of the electrical characteristics of digital signals and the basic methods of data transmission
- To have a broad knowledge of the protocols used in various types of computer networks and its technology.

DETAILS

Level	Under graduate - 7
Credit Points	3 (2-0-2)

PRE-REQUISITES OR CO-REQUISITES

Pre-requisite: CEN 214
Co-requisite: NA

ATTENDANCE REQUIRMENTS

Regular class attendance is expected of all students. Attendance falling below 75% will result in the students becoming ineligible to appear for the final examination. If a student arrives late for class and the roll has been taken, it is the responsibility of the student to notify the instructor at the end of that class that he/she arrived late and was not absent.

ASSESSMENT OVERVIEW

Assessment Task	Weighting
1. Midterm Exam-1	**20%**
2. Quizzes	**10%**
3. Assignments/Report/Seminar	**10%**
4. Practical	**20%**
5. Final Exam	**40%**

COURSE LEANING OUTCOMES

1. Understand the principles of Open Systems and the Transport/Application protocols, which facilitate them.
2. Have a broad knowledge of the protocols used in various types of computer networks.
3. Acknowledge the importance of the ISO 7-layer reference model
4. Appreciate the need for Data Communication standards.
5. Be familiar with the electrical interface and the basics of digital data transmission.
6. To understand the network design, troubleshooting, modelling and evaluation of computer networks.
7. Configure the active network components such as: switches and routers.
8. Have knowledge on network modelling and build some simple networking models using the simulation packages

ALIGNMENT OF ASSESSMENT TASKS TO LEARNING OUTCOMES

Assessment Task	Learning Outcomes							
	1	2	3	4	5	6	7	8
1. Midterm Exam-1	.	.						
2. Quizzes			.	.				
3. Assignments/Report/Seminar				.	.			
4. Practical						.	.	.
5. Final Exam	.	.	.	.	.			

Textbook and Resources

PRESCRIBED TEXTBOOKS / REFERENCE BOOKS

Data Communication and Networking			
Author/s	B. Forouzan	Year	2006
Edition	4	Publisher	Mc Graw hill
Data and Communication			
Author/s	W. Stallings	Year	2010
Edition	9	Publisher	Prentice Hall
Computer Networks			
Author/s	AS Tanenbaum	Year	2010
Edition	5	Publisher	Prentice Hall
Communication Networks			
Author/s	A Leon-Gracia and I Widjaja	Year	2003
Edition	2	Publisher	Mc Graw hill
Wireless and Mobile Network Architecture			
Author/s	Lin and Chlatmtac	Year	2000
Edition	1	Publisher	Wiley
Understanding Data Communications and Networks			
Author/s	William A Shay	Year	1998

Edition	2	Publisher	PWS Publishing Company
Local Area Networks			
Author/s	Keiser C.E	Year	1997
Edition	1	Publisher	Tata Mc Graw hill

IT RESOURCES

You will need access to the following IT resources:

- Internet
- http://faculty.mu.edu.sa/stirumalai/

Referencing style

All submissions for this course must use the **American Psychological Association (APA)** referencing style. For further information, see the Assessment Tasks below.

Teaching Contacts

Course Coordinator:	Prof. Saravanan
Lab/Tutorial Instructor:	Mr. Yazan
Email:	s.tirumalai@mu.edu.sa
Office Hours:	Sunday: 10 am to 11 am Tuesday: 8 am to 12 pm
Office Number:	0164045385

Schedule

Week	Module/Topic	Chapter	Event and submission
Week-1	Network architectures, Open Systems Interconnection (OSI) model, TCP/IP protocol,	B. Forouzan Data Communication and Networking Chapter 1	
Week-2	Data transmission by TCP and Ethernet, (ICMP),UDP , TCP/IP, Telnet, FTP,	Chapter 1	

	SMTP,NFS, SNMP,DNS, Internet Architecture		
Week-3	Networking Fundamentals Switching techniques, Datagram, Virtual circuit,	Chapter 8	
Week-4	Connectionless and connection oriented communication, Message switching, Cell switching	Chapter 8	
Week-5	Fundamentals of Data Communications: Introduction, Communication Systems, Signal and data, Channel Characteristics.	Chapter 3	
Week-6	Transmission modes, Synchronous and asynchronous transmission, Transmission Media,	Chapter 4	
Week-7			**Mid Term 1**
Week-8	Concept of Modulation, Encoding techniques and CODEC, Classification of Modems, Establishing a Connection	Chapter 4	
Week-9	Data Communication Data Transmission Circuits, channels and multi channeling, Multiplexing , Access Techniques , Baseband versus Broadband	Chapter 6	
Week-10	Introduction to LAN,LAN Topology, Fast LAN, Virtual LANs, Introduction to WAN – DQDB (IEEE 802.6) & FDDI	Chapter 13	
Week-11	Introduction to Mobile technology, Satellite Communication. Dial up Telephone networks, Leased Line, X.25,ISDN, ATM	Chapter 16	

	Structure, Cellular Radio, Telephony (GSM), VSAT		
Week-12	Security and Privacy Cryptography, Message Security, User Authentication, and Key Management	Chapter 31	
Week-13			**Quizzes**
Week-14	Security Protocols in the Internet. Network Security, firewall, VPN.	Chapter 31	
Week-15	Revision		**Assignment Submission**

Assessment Task

WRITTEN ASSESMENT

Assessment Title	Midterm Exam-1
Task Description	This assignment is aligned to learning outcomes 1 & 2. In that regard, the assignment contains questions that assess: 1) students' thorough understanding in the concepts of network layers 2) standards and protocols
Assessment Due Date	Week 7
Return Date to Students	Week 8
Weighting	20%
Learning Outcomes Assessed	1. Understand the principles of Open Systems and the Transport/Application protocols, which facilitate them. 2. Have a broad knowledge of the protocols used in various types of computer networks.

Assessment Title	Quizzes
Task Description	This assignment is aligned to learning outcomes 3 & 4. In that regard, the assignment contains questions that assess students' thorough understanding in protocols and standards
Assessment Due Date	Week 13
Return Date to Students	Week 14
Weighting	10%
Learning Outcomes Assessed	3. Acknowledge the importance of the ISO 7-layer reference model 4. Appreciate the need for Data Communication standards

Assessment Title	Assignment
Task Description	This assignment is aligned to learning outcomes 5,6 & 7. In that regard, the assignment contains questions that assess: students' thorough understanding in drawing ER diagrams
Assessment Due Date	Week 15
Return Date to Students	Week 15
Weighting	10%
Referencing Style	American Psychological Association (APA)
Submission	Online Submission through E-mail
Learning Outcomes Assessed	4. Appreciate the need for Data Communication standards. 5. Be familiar with the electrical interface and the basics of digital data transmission

Assessment Title	Practical
Task Description	This assignment is aligned to learning outcomes 6, 7 & 8. In that regard, the assignment contains questions that assess students' thorough understanding the basic network design, trouble shooting and modelling of a simple network.
Assessment Due Date	Every week as prescribed
Return Date to Students	Every week as prescribed
Weighting	20%
Learning Outcomes Assessed	6. To understand the network design, troubleshooting, modelling and evaluation of computer networks. 7. Configure the active network components such as: switches and routers. 8. Have knowledge on network modelling and build some simple networking models using the simulation packages

FINAL EXAMINATION

Outline	Complete an examination
Date	**During University examination period**
Weighting	40%
Length	180 Minutes
Details	No Calculator Permitted Closed Books
Learning Outcomes Assessed	1. Understand the principles of Open Systems and the Transport/Application protocols, which facilitate them. 2. Have a broad knowledge of the protocols used in various types of computer networks. 3. Acknowledge the importance of the ISO 7-layer reference model 4. Appreciate the need for Data Communication standards. 5. Be familiar with the electrical interface and the basics of digital data transmission