Course Profile

Course Name:-	**Computer Networks and Data Communication**
Course Code:-	**CEN 317**
Academic Year:-	**2013-2014**
Semester:-	**2**

Course Overview

This course is introducing the following topics

- 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.

Course Details	
Level:-	**7**
Credit:-	3 (2-0-2)
Pre-Requisites:-	CEN 214
Co- Requisites:-	**NIL**

Learning Outcomes of Course

After successful completion of this course, student will be able to-

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

Course Assessment

Name of Assessment Task	Weight of Assessment	Week Due
1. Midterm Exam-1	**20%**	**Week 7**
2. Midterm Exam-2 – Quizzes	**10%**	**Week 13**
3. Assignments/Report/Seminar	**10%**	**Week 14**
4. Practical	**20%**	**Every Week**
5. Final Exam	**40%**	**Week 16/17**

Assessment Task and Learning Outcomes Alignment

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

Teaching Contact Details

Name of Course Coordinator:-	Prof. Saravanan
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Lab/Tutorial Instructor:-	Mr. Yazan
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Office Hours:-	Sunday: 10 am to 11 am Tuesday: 8 am to 12 pm
Office Number:-	024-1-18-3
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Details of Required Text Book

Book Name	Authors Name	Publisher	Year	Edition
1. Data Communication and Networking	B. Forouzan	Mc Graw hill	2006	4

Details of Required Reference Books

Book Name	Authors Name	Publisher	Year	Edition
1. Data and Communication	W. Stallings	Prentice Hall	2010	9
2. Computer Networks	AS Tanenbaum	Prentice Hall	2010	5
3. Communication Networks	A Leon-Gracia and I Widjaja	Mc Graw hill	2003	2
4. Wireless and Mobile Network Architecture	Lin and Chlatmtac	Wiley	2000	1
5. Understanding Data Communications and Networks	William A Shay	PWS Publishing Company	1998	2
6. Local Area Networks	Keiser C.E	Tata Mc Graw hill	1997	1

IT Resources

The following IT Resources will require to access-

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

Course Schedule

Course Topics	Book's Chapter	Event Name	Week Due
Network architectures, Open Systems Interconnection (OSI) model, TCP/IP protocol	B. Forouzan Data Communication and Networking Chapter 1		Week-1
Data transmission by TCP and Ethernet, (ICMP),UDP , TCP/IP, Telnet, FTP, SMTP,NFS, SNMP,DNS, Internet Architecture	Chapter 1		Week-2
Networking Fundamentals Switching techniques, Datagram, Virtual circuit	Chapter 8		Week-3

Connectionless and connection oriented communication, Message switching, Cell switching	Chapter 8		Week-4
Fundamentals of Data Communications: Introduction, Communication Systems, Signal and data, Channel Characteristics	Chapter 3		Week-5
Transmission modes, Synchronous and asynchronous transmission, Transmission Media,	Chapter 4		Week-6
		Mid Term 1	Week-7
Concept of Modulation, Encoding techniques and CODEC, Classification of Modems, Establishing a Connection	Chapter 4		Week-8
Data Communication Data Transmission Circuits, channels and multi channeling, Multiplexing , Access Techniques , Baseband versus Broadband	Chapter 6		Week-9
Introduction to LAN,LAN Topology, Fast LAN, Virtual LANs, Introduction to WAN – DQDB (IEEE 802.6) & FDDI	Chapter 13		Week-10
Introduction to Mobile technology, Satellite Communication. Dial up Telephone networks, Leased Line, X.25,ISDN, ATM Structure, Cellular Radio, Telephony (GSM), VSAT	Chapter 16		Week-11
Security and Privacy Cryptography, Message Security, User Authentication, and Key Management	Chapter 31		Week-12
		Mid Term 2 - Quizzes	Week-13
Security Protocols in the Internet. Network Security, firewall, VPN.	Chapter 31		Week-14
Revision		**Assignment Submission**	Week-15
			Exam Week

Referencing Style

The **American Psychological Association (APA)** referencing style must be use for all submissions of this course.

Course Assessment Task

Assessment Name	Midterm Exam-1
Description of Task Assessment	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
Task Assessment Due Week/Date	Week 7
Return Week/Date to Students	Week 8
Weight of Task Assessment	20%
List 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 Name	Mid Term 2 - Quizzes
Description of Task Assessment	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
Task Assessment Due Week/Date	Week 13
Return Week/Date to Students	Week 14
Weight of Task Assessment	10%
List Learning Outcomes Assessed	**4.** Acknowledge the importance of the ISO 7-layer reference model **5.** Appreciate the need for Data Communication standards

Assessment Name	Assignment
Description of Task Assessment	This assignment is aligned to learning outcomes 4 & 5. In that regard, the assignment contains questions that assess: students' thorough understanding in data communication standards and data transmission
Task Assessment Due Week/Date	Week 15
Return Week/Date to Students	Week 15
Weight of Task Assessment	10%
List 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 Name	Practical
Description of Task Assessment	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.
Task Assessment Due Week/Date	Every week as prescribed
Return Week/Date to Students	Every week as prescribed
Weight of Task Assessment	20%
List 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

Assessment Name	Final Exam
Weight of Task Assessment	40%
Duration	180 Minutes
Warning	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