COURSE OUTLINE

Department: Telematic Optic **Eng.**	**Page 1 of 3**
Subject & Code: Communications and Computer Network (MET 1312) **Total Lecture Hours: 2 hours x 14 weeks**	**Semester: II** **Academic Session : 2008/2009**

Lecturer : Dr Sharifah Hafizah Syed Ariffin
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Synopsis : This course will enhance the students' knowledge on communication and computer network. It explains the basic concept of network layers, protocols, interfacing and inter-working between computer networks and network devices in telecommunication systems. The students will be taught with the various possible techniques to understand the modern networks for wired and wireless services..

Learning Outcomes : By the end of the course, students should be able to:

i) understand the basic concept of network layers, protocols, interfacing and inter-working
ii) Explain the concept of data communication using layered approach based OSI TCP/IP and their applications.
iii) Determine the various types of computer networks for LAN and WAN
iv) Analyse the IP packet fields using software tool
v) Determine the classful and classless IP address configuration.
vi) Solve network performance scenario problem using calculation
vii) Solve network performance scenario problem using software tool.

Prepared by: **Name: Dr. Sharifah Hafizah Syed Ariffin** **Signature:** **Date: 11.11.2008**	**Certified by: (Course Coordinator)** **Name: Assoc. Prof. Dr. Syed Abd Rahman** **Signature:** **Date: 11.11.2008**

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Weekly Schedule:

Week 1 – 2 : **Introduction to Computer Networks and the Internet**
a) **Introduction**

Weeks 3 -4 : **Network Layer**
a) **The OSI and TCP/IP Model**
b) IP Protocol Function
- IP Packets format
- Classful Addressing
- Classless Addressing
- Fragmentation Renegotiation

Weeks 4 – 6 : **Network Layer continues..**
a) Internet Control Management Protocol (ICMP)
b) Address Resource Protocol (ARP)
c) Reverse Address Resource Protocol (RARP)

Week 6 – 7 : **Transport Layer**
a) TCP Layer
- TCP Header and Functions
- Error Control
- Flow Control

b) **TCP Performance**

Week 8 : **Semester Break**

Week 9 – 10 : **Internet Protocol Version 6 (IPv6)**
a) **IPV4 vs. IPV6**
- Advantanges
- Disadvantages

b) **Reasons for IPV6**
c) IPv6 Migration
- Dual Stacking
- Tunelling
- Header Translation

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Weekly Schedule:

Week 11 – 12 : **Network Architecture**

a) Intranet
b) Private Networks
   - Network Address Translation (NAT)
   - Virtual Private Network (VPN)
c) **Mobile Network**
- Mobile IPv4
- Mobile IPv6

Week 13 – 14 : **Network Security**

a) Security requirement and attacks
b) **Confidentiality with Conventional Encryption**
c) **Public Key Encryption and Digital Signature**
d) **IPV4 and IPV6 Security**

Weeks 15 : **Network Performance**

a) Markov Process
b) Balance Principle
c) Queuing Theory
d) M/M/1

Teaching Methodology : Lecture, Individual Assignment, group assignments and Test

References :

1.'TCP/IP Protocol Suite, Behrouz A. Forouzan, McGraw Hill,Third edition 2007.
2.'Computer Networking: A Top Down Approach Featuring the Internet', James Kurose and Keith W. Ross, Addison Wesley.
3.'Data and Computer Communication', William Stallings, Prentice Hall, eight edition 2007.
4.'Computer Networks' Andrew S. Tanebaum, Prentice Hall,2003.
5.'Data Communications and Networking', Behrouz A. Forouzan, McGraw Hill, Fourth edition 2007.
6.'Internetworking with TCP/IP Principles, Protocols, and Architecture', Douglas E. Comer, Pearson, 2007

Assessment :			
Assignment 1	: 10%	Week 3
Test 1	: 15%	Week 7
Assignment 2	: 10%	Week 10
Test 2	: 15%	Week 12
Final Examination	: 50%	