The Legal House – International Business College
School of Electrical and Computer Engineering

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Communication Protocol
SECE 104

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Aim of Unit:

This unit will give students a comprehensive knowledge about TCP/IP Protocol. This unit includes the OSI Model, ARP and RARP, Internet Protocol, User Datagram Protocol, Transmission Control Protocol, Unicast Routing Protocols, Multicasting and Multicast Routing Protocols, Domain Name System, Remote Login: TELNET, File Transfer: FTP and TFTP, Electronic Mail: SMTP, POP, and IMAP, Network Management, World Wide Web, IP over ATM, Mobile IP, Multimedia, Network Security.

Unit Outline:

- The OSI Model and the TCP/IP Protocol Suite
- IP Addresses: Classful Addressing, Classless Addressing
- ARP and RARP, User Datagram Protocol (UDP)
- Internet Protocol (IP), Internet Control Message Protocol (ICMP), Internet Group Management Protocol (IGMP)
- Transmission Control Protocol (TCP)
- Stream Control Transmission Protocol (SCTP)
- Unicast Routing Protocols (RIP, OSPF, and BGP)
- Multicasting and Multicast Routing Protocols
- Host Configuration: BOOTP and DHCP
- Domain Name System (DNS), Remote Login: TELNET
- File Transfer: FTP and TFTP
- Electronic Mail: SMTP, POP, and IMAP
- Network Management: SNMP, World Wide Web: HTTP
- IP over ATM, Mobile IP, Multimedia
- Next Generation: IPv6 and ICMPv6, Network Security

Mode of Delivery:

Two hours lecture per week.
One hour tutorial per week.

Unit Assessment:

Attendance at Lectures and Tutorials	20 %
Assignments, Laboratories	40 %
Final Presentation	40 %

Assessment Requirements:

Students must receive 50% or more for each component of Unit Assessment in order to pass the subject.

Student Workload:

Students will have 3 hours per week face-to-face learning during semester. Students are expected to work at least 5 hours per week out of class.

Text Book:

1. Behrouz A. Forouzan, "TCP/IP Protocol Suite", 2nd edition, McGraw-Hill, 2003

Recommended References:

1. Douglas E. Comer, "Internetworking with TCP/IP", Vol. 1, 5th edition, Prentice Hall, 2006
2. Mahbub Hassan, Raj Jain**,** "High Performance TCP/IP Networking", Prentice Hall, 2004

Subject Schedule

Weeks	Lecture/Tutorial Topics	Assignments/ Laboratories	Reading from Text Book
1	Introduction and The OSI Model and the TCP/IP Protocol Suite	Lab #1	Chapters 1, 2
2	Transmission Control Protocol (TCP)	Lab #1	Chapter 12
3	Internet Protocol (IP), IP Addresses: Classful Addressing, Subnetting/Supernetting and Classless Addressing, Delivery and Routing of IP Packets	Assignment #1	Chapters 4, 5, 6, 8
4	ARP and RARP, Internet Control Message Protocol (ICMP)	Lab #1, Assignment #1	Chapters 7, 9
5	Internet Group Management Protocol (IGMP), User Datagram Protocol (UDP)	Lab #1, Assignment #1	Chapters 10, 11
6	Unicast Routing Protocols (RIP, OSPF, and BGP), Multicasting Routing Protocols	Collect Lab #1	Chapters 13, 14
7	Application Layer and Client-Server Model, Socket Interface, BOOTP and DHCP	Collect Assignment #1	Chapters 15, 16, 17
8	Domain Name System (DNS), TELNET and Rlogin	Lab #2	Chapters 18, 19
9	File Transfer Protocol (FTP), Trivial File Transfer Protocol (TFTP), Simple Mail Transfer Protocol (SMTP)	Assignment #2	Chapters 20, 21, 22
10	Simple Network Management Protocol (SNMP), Hypertext Transfer Protocol (HTTP)	Lab #2, Assignment #2	Chapters 23, 24
11	World Wide Web, IP over ATM, Mobile IP	Collect Lab #2	Chapters 25, 26, 27
12	Real-Time Traffic over the Internet, Internet Security, Private Networks, Next Generation: IPv6 and ICMPv6	Collect Assignment #2	Chapters 28, 29, 30, 31
13	Preparing for Final Presentation		
14	Final Presentation		

Subject Description

UNIT	SECE104 Communication Protocol

FIELD	Analyse and Design

DESCRIPTION	This unit describes the competency required to ensure the client requirements are developed as a strategy to designing the communication protocol.

RELATED COMPETENCY STANDARDS	The project lifecycle, Computer Systems and Telecommunications methodologies employed will determine which particular units of competency are relevant to this unit. Some include SECE101, SECE105, SECE106, SECE108, SECE109, SECE111.

	ELEMENT	PERFORMANCE CRITERIA
1	TCP/IP Protocol	• Comprehensive treatment of the TCP/IP Protocol Suite and the OSI Model, IP Addresses: Classful Addressing, Classless Addressing • Full coverage of Internet Protocol (IP), Internet Control Message Protocol (ICMP), Internet Group Management Protocol (IGMP), Transmission Control Protocol (TCP), ARP and RARP, User Datagram Protocol (UDP).
2	Control Transmission and Routing Protocol	• Coverage of essential elements of Stream Control Transmission Protocol (SCTP). • Detailed specifications of Unicast Routing Protocols (RIP, OSPF, and BGP), Multicasting and Multicast Routing Protocols, Host Configuration: BOOTP and DHCP
3	File Transfer and Electronic Mail	• Coverage of essential elements of Electronic Mail: SMTP, POP, and IMAP, Domain Name System (DNS), Remote Login: TELNET • Detailed specifications of File Transfer: FTP and TFTP
4	Network Management and Next Generation	• Comprehensive treatment of Network Management: SNMP, World Wide Web: HTTP, IP over ATM, Mobile IP, Multimedia. • Discussion of Next Generation: IPv6 and ICMPv6, Network Security.