NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF SCIENCES

COMPUTER SCIENCE PROGRAM

CC362 – NETWORK ORIENTED COMPUTING

I. GENERAL INFORMATION

CODE	: CC362 – Network Oriented computing
SEMESTER	: 6
CREDITS	: 4
HOURS PER WEEK	: 6 (Theory – Laboratory)
PREREQUISITES	: CC361 Operating Systems
CONDITION	: Mandatory

II. COURSE DESCRIPTION

Introduces the structure, implementation, and theoretical foundations of the computer network and the applications that have been enabled by this technology.

III. LEARNING UNITS

1. Communication and networking

I: Network standards and standardization organizations.
II: The ISO reference model of 7 layers, in general, and its TCP/IP instances.
III: Circuit switching and packet switching.
IV: Streams and datagrams.
V: Physical network layer concepts.
VI: Concepts of data link layer.
VII: Interconnection and routing.
VIII: Services of the transport layer.

2. The web as an example of client-server computing

I: Web technologies.
II: Characteristics of web servers.
III: Role of the client computer.
IV: Nature of the client-server relationship.
V: Web protocols.
VI: Support tools for web-site creation and web administration.
VII: Developing Internet information servers.
VIII: Publication of information and applications.

3. Web application creation

I: Protocols of the application layer.
II: Principles of web engineering.
III: Websites with database.
IV: Calls to remote procedures.
V: Small objects distributed.
VI: The middleware role.
VII: Support tools.
VIII: Security problems in distributed object systems.
IX: Web-based applications throughout the company.

4. Network management

I: Review of network management issues.
II: Topics for internet service providers.
III: Security issues and firewalls.
IV: Quality of service problems.

5. Compression and decompression

I: Review of basic data compression.
II: Compression and decompression of audio.
III: Compression and decompression of images.
IV: Compression and decompression of video.
V: Performance problems.

6. Multimedia data technologies

I: Review of Multimedia technologies.
II: Multimedia standards.
III: Planning capacity and performance problems.
IV: Input and output devices.
V: MIDI keyboards, synthesizers.
VI: Storage standards.
VII: Multimedia servers and file systems.
VIII: Tools to support multimedia development.

7. Wireless and mobile computing

I: Overview of the history, evolution, and compatibility of wireless standards.
II: The special problems of wireless and mobile computing.
III: Wireless local area networks and satellite networks.
IV: Wireless local loops.
V: The mobile Internet protocol.
VI: Conscious adaptation of mobiles.
VII: Extending the client-server model to accommodate mobility.
VIII: Mobile data access.
IX: Software packages for mobile and wireless computing.
X: The role of middleware and support tools.
XI: Performance problems.
XII: New technologies.

IV. BIBLIOGRAPHY

- Gast, M. 802.11 Wireless Networks: The Definitive Guide. O'reilly, 2nd edition. 2008

- McNa, C. Network Security Assessment, Know Your Network. Oreilly, 2nd edition. 2008

- Stalling, W. Communications and Computer Networks. Prentice Hall, 7th edition. 8420541109. 2005.

- Stevens, R. TCP / IP and Protocols Implementation. Addison-Wesley, 2005

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- Andrew S. Tanenbaum. Computer Networks 7th edition. Prentice Hall 2005.

- Wasserman, M. (2008). Engineer Task Force. http://edu.ietf.org/