Lebanese American University	COE	431
School of Engineering	Computer Networks (required)	3 credits
Department of Electrical and Computer Engineering	TTh 11:00AM-12:15PM	ENG 401
Course syllabus	Dr. Wissam F. Fawaz	Spring 2013

1. Course Description and Course Prerequisite

This course is an introduction to both today's and tomorrow's networks. In particular, it covers a wide spectrum of networking technologies with an emphasis on those relating to wired networks. Moreover, the course outlines how networks work on *the inside,* from underlying hardware at the physical layer up through the top-level application layer by touching on:

- Physical layer (e.g., twisted-pair wires, coaxial cables, and fiber optics)
- Data link layer (e.g., protocol principles, protocol verification, HDLC, and PPP)
- MAC sublayer (e.g., gigabit Ethernet, 802.11, and switching)
- Network layer (e.g. routing algorithms, IPv4, and IPv6)
- Transport layer (e.g., socket programming, UDP, and TCP)
- Application layer (e.g., HTTP, FPT, SMTP, and DNS)

2. Course Objectives

At the end of this course, students should be able to:

- Demonstrate an understanding of the basic principles of computer networking
- Implement complex networked client/server applications
- Understand the interplay among the different layers of the OSI and TCP/IP models
- Identify and use appropriate tools to evaluate the performance of network communication protocols

3. Contribution of course to meeting the professional component

Professional Component	Credits
Mathematics and Basic Sciences	0
Engineering Topic	3
General Education	0

4. Relationship of course to program outcomes

PO (c) *an ability to design a system, component, or process to meet desired needs with realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.*

- Expresses unambiguous needs and identifies objectives and requirements
- Identifies realistic constraints related to the design effort

PO (e) *an ability to identify, formulate, and solve engineering problems*

- Demonstrates the ability to formulate engineering problems, to recognize and identify the basic governing theories and principles in Computer Systems.

PO (k) *an ability to use the techniques, skills and modern engineering tools necessary for engineering practice*

- Uses computer programs necessary for engineering practice

5. Course Outline

Topics to be covered include:

- Computer Networks and the Internet (Weeks 1 – 4)
- Application and Physical Layers (Weeks 5 – 7)
- Transport Layer (Weeks 8 – 10)
- Network Layer (Weeks 11 & 12)
- Data Link Layer (Weeks 13 & 14)

6. Required tools / software / skills

Good programming skills (Matlab, C, C++, or Java)

7. Textbook[s]

James Kurose and Keith Ross, *Computer Networking: A Top-Down Approach*, Fifth Edition, Addison Wesley, 2010.

8. Additional References

Andrew S. Tanenbaum, *Computer Networks*, Fourth Edition, Pearson Prentice Hall, 2003.
D. Comer, *Computer Networks and Internets: with internet Applications, 4th edition, Prentice Hall, 2004.*

9. Schedule of Exams & Grading Percentage

Assignments/Quizzes:	15%
Projects:	10%
Exam I:	20%
Exam II:	25%
Final:	30%

10. Course Policies

Cheating is considered to be a very serious breach of the cheating policy of the faculty and will not be tolerated. Students are expected to submit their own solutions to all programming projects. Solutions must be handed in at the beginning of the class in which they are due. Late projects will not be accepted.

11. General Comments

Instructor: Dr. Wissam FAWAZ email: wissam.fawaz@lau.edu.lb
Office: 103, Bassil Bldg, ext: 2414
Office Hours: Tuesday and Thursday from 12:45 p.m. – 3:45 p.m.
Course webpage: http://www.wissamfawaz.com/computer_networks.htm

12. General Rules & Regulations

- A student can miss no more than the equivalent of 5 weeks of instruction. Students who exceed the allowed number of absences must withdraw from the course; otherwise, the course grade will be recorded as "F".
- Plagiarism: students caught cheating on an exam receive a grade of Zero on the exam in the first cheating attempt and a warning. Students caught cheating for the second time in the same course receive an F grade in the course and a second warning. A grade of zero on an exam resulting from cheating must be counted in the student's course grade. The zero cannot be dropped in computing the final grade in case the instructor has a policy of allowing students to drop their worst exam grade.
- Any student who receives 3 warnings will be suspended.