

Carleton University
Department of Systems and Computer Engineering

SYSC 4602

Introduction to Computer Communications

Fall 2011

Course Outline

Instructor:

Professor Ioannis (John) Lambadaris, Email: ioannis@sce.carleton.ca,
<http://www.sce.carleton.ca/faculty/lambadaris.html> Phone: ext. 1974

Office Hours:

Professor Lambadaris: After the classes on Tuesdays and Thursdays from 10:00am-11:00am, in room ME 4442 or by appointment.

Course Web Page: <http://www.sce.carleton.ca/courses/sysc-4602/f11/>

Login:sysc4602

Password: iel2011

Teaching Assistants:

- Chaudhary, Aizaz ul Haque
- Basil Saeed
- Mehmet Vefa Bicakci

Their office hours room numbers and email address will be posed on the web shortly!

Course Description and Objectives:

Provide an introduction to telecommunication networks and computer communications. Emphasis will be given on principles of operation and elementary performance analysis. Finally some emerging technologies will be introduced and discussed.

Prerequisites:

Students who have not satisfied the prerequisites for this course must either a) withdraw from the course, or b) obtain a prerequisite waiver from the Registrar's office, or c) will be deregistered from the course after the last day to register for courses in the Fall term.

Lectures/Laboratories

Lectures: Tuesdays and Thursdays, 8:30am-10:00am, Tory Building 208

Laboratory:

- *Even weeks, section A2E* Fridays, 2:35 pm - 5:25 pm, AA508
- *Odd weeks, section A10* Mondays 11:35am-2:25pm, AA508

The week of September 5 is by definition an EVEN week

Textbook: Alberto Leon Garcia, Indra Vidjaja, "Communicatoin Networks: Fundamental Concepts and Key Architectures", Mc-Graw Hill, Second Edition, ISBN 0-07-246352-X
This is the main textbook that we will be following and I would recommend buying it.

Recommended Text:

1. Computer Networks, A. S. Tanenbaum, 3rd edition, Prentice-Hall, 1996, TK5105.5.T36 1996.
2. Computer Communications and Networking technologies, M.A. Gallo, W. M. Hancock, Brookes/Cole, ISBN: 0-534-37780-7

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Additional References:

1. Computer Networking: A Top-Down Approach Featuring the Internet, D. Comer, Addison Wesley 2001
2. Data Networks, D. Bertsekas and R. Gallager, 2nd edition, Prentice-Hall, 1992, K5105.B478 1992.
3. Data and Computer Communications, W. Stallings, 5th edition, Prentice-Hall, 1997, TK5105.S73 1996.
4. High-Speed Networks: TCP/IP and ATM Design Principles, W. Stallings, Prentice-Hall, 1998, TK5105.585.S73.
5. An Engineering Approach to Computer Networking: ATM Networks, the Internet, and the Telephone Network, S.Keshav, Addison-Wesley, 1997, ISBN #0-201-63442-2.
6. Broadband Integrated Networks, M. Schwartz, Prentice-Hall, 1996, TK5103.75.S38.
7. Computer Networks and Internets, D. E. Comer, Prentice-Hall, 1997, TK5105.5.C5897.
8. Networking Standards, W. Stallings, Addison Wesley, 1993, TK5105.5.S788.
9. Probability and Random Processes for Electrical Engineering, A. Leon-Garcia, Addison Wesley, 1989, TK153.L425
10. Queueing Systems, L. Kleinrock, vol. 1, John Wiley, 1975, T57.9.K6.
11. Communication Networks: A First Course, J. Walrand, Second Edition, McGraw-Hill, 1998, ISBN= 0-256-17404-0

Labs, Assignments & Exams:

There will be 4-5 assignments, 4 labs, one quiz, two in class exams.

The dates of the quiz and exams are as follows:

- Quiz: **Tuesday October 4** (Quiz will last approx. 20 minutes)
- 1st in class exam: **Thursday October 27**, exam will be during the class hours
- 2nd in class exam :**Thursday December 1**, exam will be during the class hours, it will cover material after the 1st exam
- We will have 4 labs. All the labs except the last one will be based on the popular network simulator **OPNET** (<http://www.opnet.com/>). Extra tutorials, tutorial sessions and further details will be posted on the course web site.

Please check the web regularly for further information!

The quiz and in-class exams will be closed book. Non-programmable calculators are allowed. You are allowed to create a one page (double sided) of notes and formulas. **It is up to you to prepare this page.** The final exam will be scheduled by the University and it will be closed book. It will cover the entire class material. Non-programmable calculators are allowed. You are allowed to create a one page (double sided) of notes and formulas. Again, **it is up to you to prepare this page.**

Grading Scheme:

Assignments: 10% total weight towards the final grade

Laboratory: 10% total weight towards the final grade

Late assignments & Lab reports will not be accepted

Quiz: The quiz will carry a 10% weight towards the final grade

In-Class Exams: First in-class exam will carry a 30% and the second exam a 40% weight towards the final grade.

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Students need to form groups for labs and assignments (recommend 3 students per group). In this case the group grade will be the same grade for each student in the group! **Each group formation will not change during the course.** Each group will have to declare its participants to the instructor/TAs in writing (please prepare a short **HANDWRITTEN** note and give it to me as soon as possible---please **DO NOT EMAIL**)

Students with Disabilities:

Students with disabilities requiring academic accommodations in this course must register with the Paul Menton Centre for Students with Disabilities for a formal evaluation of disability-related needs. Registered PMC students are required to contact the Centre, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you require accommodation for your formally scheduled exam(s) in this course, please submit your request for accommodation to PMC by November 11th 2011 for Fall term (December exams).

Plagiarism:

Plagiarism (copying and handing in for credit someone else's work) is a serious instructional offense that will not be tolerated. Please refer to the section on instructional offenses in the Undergraduate Calendar for additional information.

Tentative Week by week outline:

- (Week 1) Course arrangements and introductory material. Course logistics and quick overview of contents of the course
- (Week 2) Physical Layer
- (Week 3) Data Link layer and protocols
- (Week 4-5) Network Layer
- (Week 6) Wireless Networking technologies
- (Week 7-8) Transport Protocol (introduction to TCP)
- (Week 9) Local Area Networks and LAN Interworking
- (Week 10) Wide Area networks (Frame Relay, ATM)
- (Week 11) (Advanced Topics) Switching and Routing techniques: Performance Analysis
- (Week 12) (Advanced Topics) Switching and Routing Techniques: MPLS
- (Week 13) Overview, discussion/questions, preparation for final examination