# Carleton University

## Department of Systems and Computer Engineering

***SYSC 4701 Communication Systems Lab Winter 2012***

## Course Outline

**Instructor:**
Associate Professor C. Huang
Room 4486ME
Tel: 520-5730
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http://www.sce.carleton.ca/faculty/huang.html

**Course Objectives:**

Project-oriented level experience in the design of communication systems to meet user requirements. Lectures on queuing theory and teletraffic analysis; system specification and design: requirements analysis, solution alternatives, evaluation of alternative technologies, design, costing, implementation, test.

Prerequisite: fourth-year status in Communications Engineering. Students who have not satisfied the prerequisites for this course must either a) withdraw from the course, or b) obtain a prerequisite waiver online at www.sce.carleton.ca/dept/us/academicsupport/forms , or c) will be deregistered from the course after the last day to register for courses.

Lectures two hours a week, laboratory four hours a week.

**Text:**

*High-performance Data Network Design*, T. Kenyon, Digital Press, 2002

**References:**

*Routing, Flow, and Capacity Design in Communication and Computer Networks*, M. Pioro and D. Medhi, Elsevier 2004

P. Oppenheimer, *Top-Down Network Design*, 2nd Edition, Cisco Press, 2004

E. Aboelela, *Network Simulation Experiments Manual*, 2nd Edition, Elsevier, 2008

*Network Analysis, Architecture, and Design*, J. D. McCabe, 3rd Edition, Elsevier 2007

*TCP/IP Illustrated*, Vol. 1, W. R. Stevens, Addison-Wesley, 1994

*TCP/IP Illustrated*, Vol. 2, G. R. Wright, W. R. Stevens, Addison-Wesley, 1995

*High-speed Netwworks and Internets*, W. Stallings, 2nd edition, Prentice Hall, 2002

*Communication Networks: A First Course*, J. Walrand, 2nd ed., Richard & Irwin, 1998

*High-performance Data Network Design*, T. Kenyon, Digital Press, 2002

*An Engineering Approach to Computer Networking: ATM Networks, the Internet and the Telephone network*, S. Keshav, Addison Wesley, 1997

http://www.ietf.org

**Marking Scheme:**

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|---|---|
| Lab. | 50% |
| 2 Assignments | 4% |
| Midterm | 10% |
| Final Exam | 36% |

**Deadline Policy:**

A minimum of one week, but normally ten days, will be allowed for completion of all assignments. Late assignments will not be accepted.

**Class Schedule:**

4:05am-5:25am, Wednesday and Friday, ME 4342.

**Checking Marks:**

Lists of term marks will be posted on dates to be announced. It is each student's responsibility to check that marks are correct or report any errors by the specified deadline.

**Laboratory:**

1:35am – 5:25pm Tuesday, AA507

**Final Exam:** *Is for the evaluation purposes only and will not be returned to the student.*

**Students with Disabilities:**
Students with disabilities requiring academic accommodations in this course are encouraged to contact a coordinator at the Paul Menton Centre for Students with Disabilities to complete the necessary letters of accommodation. After registering with the PMC, make an appointment to meet and discuss your needs with me at least two weeks prior to the final exam. This is necessary in order to ensure sufficient time to make the necessary arrangements. Please note the following deadlines for submitting completed forms to the Paul Menton Centre: ***March 7, 2012*** for the Winter Term.

**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.

**Review Week:**

Accreditation of our Engineering programs requires that classes and laboratories, tutorials, or problem analysis sessions continue to run through the review period of the winter term. For 2010, the last day of normally scheduled classes (for non-engineering courses) falls on Wednesday, April 5th.

## Course Outline

**Course Schedule:**

1) Course arrangements, scope etc. Analyze requirements.

2) Characterizing existing networks.

3) Network measurement topics.

4) Network measurement topics. Assignment 1 issued.

5) Network modeling.

6) Network cost analysis. Assignment 1 due.

7) Winter break.

8) Midterm, access network design.

9) Core network design.

10) Network dimensioning problem.

11) Topological design problem.

12) Restoration design problem. Assignment 2 issued.

13) Multi-layer network design problem

14) PA sessions. Assignment 2 due. Term marks will be posted - please check. Request for correction of errors must be received before Final Exam.