Course outline

Carleton UNIVERSITY
Canada's Capital University

SYSC 5801F - Advanced topics in computer communications: Planning and Design of Computer Networks

Carleton University
Department of Systems and Computer Engineering (SCE)
Fall 2011
0.5 credit
http://webct6.carleton.ca (WebCT 6)

Professor

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Office hours	Monday (4-5pm), Wednesday (1-2:30pm) or by appointment

Course overview

Planning process of computer networks; needs and technical requirements; modeling of different network planning problems; exact and approximative algorithms; planning and expansion problems; equipment (switch, router) location problem; approximative and optimal routing algorithms; presentation of various case studies.

Prerequisite

- SYSC 4602: Introduction to computer communications or
- SYSC 4701: Communications systems lab or
- CEG 3185: Introduction to computer networks or
- CEG 4190: Computer network design or
- Equivalent networking courses.

Textbook

The following textbook is required:

- Teresa C. Pilouras, **Network Design: Management and Technical Perspectives**, 2nd edition, Auerback publications, 696 pages, 2005, ISBN: 0849316081.

Evaluation

Description	Marking Scheme
1 x Midterm	20 %
2 x Projects	50 %
1 x Final exam	30 %

Examinations: There will be a midterm and a final exam. The date, time and location will be announced later. Since exams are for evaluation purposes only, they will not be returned to students.

Projects: Students will be required to work on 2 group projects that are related to different topics discussed in class. Students are responsible for forming and managing their groups.

Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website:
http://www.carleton.ca/equity/accommodation/student_guide.htm

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website:
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Students with disabilities requiring academic accommodations in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic

medical conditions. Registered PMC students are required to contact the PMC, 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 only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the PMC website: http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/

Plagiarism

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

Tentative lectures schedule

Week	Topic
1	Course outline & Introduction
2	Technical considerations in network design
3	Notions of Graphs and Networks
4	Traffic routing
5	Performance
6	Case study: Point of presence (POP) planning problem
7	Midterm
8	Network topologies and algorithms
9	Router/Switch localisation and Network sizing: continuous vs. discrete capacity
10	Case study: Cellular network planning
11 & 12	Project presentations
13	Review and Final exam