Carleton University
Department of Systems and Computer Engineering

SYSC 4701 Communications Systems Labs Winter 2018

Instructor: Chung-Horng Lung
- Office: Mackenzie Building, Room 4434; Email: chlung@sce.carleton.ca
- Office hours: TBD

Calendar Description
This course assumes a general knowledge of computer networks and provides project-oriented level experience in the design of communication systems to meet user requirements. Lectures on teletraffic analysis; system specification and design: requirements analysis, solution alternatives, evaluation of alternative technologies, design, costing, implementation, and testing.

Pre-requisites
Fourth year status in Communications Engineering. Students who have not satisfied the prerequisites for this course must either either: (a) withdraw from the course, (b) submit a prerequisite waiver online at www.sce.carleton.ca/ughelp, or (c) will be deregistered from the course after the last day to register for courses in the term.

Course Objectives
- Develop expertise in emerging computer network technologies.
- Extend and integrate existing systems to meet new requirements in computer networks.
- Construct moderately complex network systems using industrial-quality software.
- Communicate the design effectively to peers in both oral and written forms.
- Work independently and cooperatively in groups.

Lecture and Lab Periods
There is one two-hour lecture each week. Labs are four hours each week.

Lab sheets will be distributed before or during the lab hours. You need to complete and submit the sheets as part of your overall grade. Some of the later labs will be used to check in on the project progress and/or to work on your term project.

Project
A major component of the course is a project that will lead you through the process of building a reasonably complex system. This will be a group project. The project will be of the team’s own idea. Each team member must participate in all aspects of the project: design, coding, testing and debugging, etc.

The project will be divided into several milestones, which will be evaluated and graded separately, with the weight depending on the milestone. The final grade for the project will incorporate marks for both the “process” (how the group functioned over the term) and the “product” (the quality of the final system delivered). Groups will present their work and defend their work, in mid-term and at the end of term.
Evaluation and Grading Scheme
- Lab exercises: 10%
- Project Proposal and Presentation: 10%
- Project Design Review: 15%
- Project Implementation and Unit Testing: 20%
- Project Final Assessment: 45%

Textbook
The main textbook is:

Additional technical papers and materials will be used for the course and assignments. The following is a list of suggested references for general network switching and routing technologies.


Lecture Schedule (Tentative)
1. Course Introduction, Overview of Operating Systems and Linux
2. Concurrency and Semaphores
4. The Overflow Specification
5. SDN Controller
6. SDN in Datacentre
7. SDN in Other Environments
8. Network Functions Virtualization (NFV)
9. NFV Using Virtual Machines and Containers
10. SDN Applications
11. Business Ramifications
12. Segment Routing and SDN

Special Arrangements
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://www2.carleton.ca/equity/](http://www2.carleton.ca/equity/)

**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: [http://www2.carleton.ca/equity/](http://www2.carleton.ca/equity/)
**Academic Accommodations for Students with Disabilities:** The Paul Menton Centre (PMC) for Students with Disabilities provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (*if applicable*) at [http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/](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 offense that will not be tolerated. Please refer to the section on instructional offenses in the Undergraduate Calendar for additional information.

**Health and Safety information:** Here is the link to the health and safety manual [www.sce.carleton.ca/courses/health-and-safety.pdf](http://www.sce.carleton.ca/courses/health-and-safety.pdf).