Carleton University

Department of Systems and Computer Engineering

SYSC 4504 Distributed Network Processing Fall 2011

Course Outline

Instructor*: Thomas Kunz, ME 4474, 520-3573, tkunz@sce.carleton.ca*
Office Hours: Tuesdays 2-3 pm

Course Objectives:
Distributed Systems are ubiquitous and of unprecedented importance. Examples of the Web and Internet-based applications illustrate the development and the deployment of these architectures. In distributed systems, resources and users can be located geographically anywhere. And users can access the resources or get services.

A distributed system is designed to
- enable the communication between its components and the sharing of resources
- appear as a homogeneous and coherent system
- adapt to the growth in the number of users
- face dynamically any technical change/event in its architecture.

The objective of the course is to discuss the fundamental concepts and the software solutions, in the design of a distributed system, in particular the use of WWW-related technologies. During lab sessions, students will apply the concepts presented in class in the form of programming exercises. Programming will be in JAVA. The official undergraduate calendar description can be found at http://www.carleton.ca/cuuc/courses/SYSC/4504.html.

Text: Jeffrey C. Jackson, *Web Technologies: A Computer Science Perspective*, Prentice Hall 2007, ISBN-10: 0131856030, ISBN-13: 9780131856035.

Prerequisites: (SYSC 2004 or SYSC 2100) and (SYSC 3502 or SYSC 4602) (SYSC 4602 may be taken concurrently).

Students who have not satisfied the prerequisites for this course must either a) withdraw from the course, or b) fill out a prerequisite waiver from www.sce.carleton.ca/ughelp. Students not meeting these conditions will be deregistered from the course after the last day for course registration.

Other References:
I will use WebCT for managing course interactions, grades, as well as assignment submissions. There is also a course webpage where I will post announcements, assignments, as well as other course material. The webpage is at http://kunz-pc.sce.carleton.ca/sysc4504/, and access to parts of the course material is password-controlled.

Computer Lab:
A 3-hour biweekly computer lab session has been scheduled, in which you will work on problems under the supervision of a TA. The lab is during odd weeks (see lab schedule for location). Students can also use the undergraduate computer labs whenever the Mackenzie Building and Minto CASE are open, except for those times when labs are reserved for specific courses. The department maintains a Health and Safety manual for work in the computer labs; you can find the manual at: http://www.sce.carleton.ca/courses/health-and-safety.pdf

Course Outline

Attendance:
Students are expected to attend all lectures and be able to attend the lab periods as required. The Faculty of Engineering and Design requires its students to have a conflict-free timetable, so requests to accommodate missed exams, assignment due dates, etc., because of conflicts with other courses, jobs, or vacation plans will not be considered.

Assignments and Exams:
Students will be evaluated by means of assignments, **up to** 6 pop quizzes, a midterm exam, and a final exam. The midterm exam will be in class on October 26, the final exam will be scheduled during the university exam period in December 2011. The pop quizzes will be in class or during the lab session, without prior announcement. I will only count the best 4 quizzes to determine their mark contribution, so even if you miss one or two (due to health reasons, for example), you will not be penalized.

There will be a number of assignments. Doing the assignments is the best way to learn the course material, so students are encouraged not to "write off" any particular assignment just because of its relative low weight in the overall grading scheme. In addition, completing a subset of the assignments will be a pre-requisite for passing the course. Late assignments will not normally be accepted, and will receive a mark of 0; however, students who cannot submit an assignment by the due date for valid medical or compassionate reasons should contact the instructor immediately **and prior to the due** date to arrange for appropriate accommodations (e.g., an extension of the due date). Arrangements must be made in a timely manner, otherwise the assignment will be considered late and not accepted.

Students are encouraged to discuss design issues when working on assignments; however, you are expected to write your own programs. There is a fine line between cooperating with your colleagues (discussing problems and ideas) and copying program code (plagiarism). Not only is plagiarism an instructional offense (see the current Undergraduate Calendar, Academic Regulations of the University, Section 14), but doing the assigned work by yourself is by far the best way to prepare for the exams. To facilitate discussion of assignment-related issues, WebCT maintains a discussion topic for each assignment, that will be monitored by the TA and myself.

You are encouraged to ask the TAs for feedback and suggestions for improving your Java programs. When you ask a TA to help you with one of your programs, you will be expected to present a well-documented listing of your program. The TAs may be unable to provide much assistance if all you can show is an undocumented, difficult-to-understand program.

A midterm exam will be held in-class. Students who are unable to write the exam because of illness or other circumstances beyond their control must provide evidence. In the case of illness, this requires a medical certificate dated no later than one working day after the exam. The certificate must specify the date of the onset of the illness, the (expected) date of recovery, and the extent to which the student was/is incapacitated during the time of the examination. If this information is provided to the instructor no later than five working days after the exam, the final exam mark will be used as the midterm exam mark; otherwise, the mark for the missed exam will be 0.

Final Exam: *Is for evaluation purposes only and will not be returned to the student.*
A final exam will be held during the University's December examination period. For SYSC 4504, **only students who completed at least four of the five assignments are eligible** to pass the course or, where circumstances warrant, apply to the Registrar's Office for deferral of the final exam. However, in case of deferral, the following rule will apply:

> Students who miss the final exam may be granted permission to write a deferred examination (see the Undergraduate Calendar for regulations on deferred exams). These students have additional months to study and a less crowded examination schedule compared to their colleagues who write the final exam in December. As such, it is only fair to expect substantially better performance from these students on the deferred examination than on the December final exam.

For the exams (both midterm and final exam), I **may** allow the course textbook as aid (more details will be announced at a later time). Should that be the case, only proper copies of the required course textbook will be accepted, no alternative textbooks, photocopies, etc.

Grading Scheme and Schedule:
To pass the course, a student must complete at least four assignments and pass the final examination (D- or better). For these students, the marks will be calculated as follows (with a final score of below 50 resulting in course failure):

	Assign. 1	Assign. 2	Assign. 3	Assign. 4	Assign. 5	Pop Quizzes	Midterm	Final
Weight	4%	4%	4%	4%	4%	5%	25%	50%
Handed Out	Sept. 21	Oct. 5	Oct. 19	Nov. 2	Nov. 16	Up to 6	October 26, 2011	December 2011
Due	Oct. 4 (noon)	Oct. 18 (noon)	Nov. 1 (noon)	Nov. 15 (noon)	Nov. 29 (noon)			

The schedule is synchronized with the scheduled lab sessions: a programming assignment is due on the Tuesday after a scheduled lab on Friday, which should allow you time to work on the assignment during a scheduled lab and to discuss any questions with the TA, with an extra day or so to finish it up.

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/

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://www.carleton.ca/equity/

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, as well as allowing someone else to copy your own 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 Course Outline:
1. Introduction to Distributed Computing
2. Review of Networking
3. Interprocess Communication
4. Web Essentials
5. Markup Languages
6. Client-Side Programming: JavaScript
7. Host Objects: Browsers and the DOM
8. Server-Side Programming: Java Servlets
9. Representing Web Data: XML
10. Separating Programming and Presentation: JSP

These topics correspond to specific chapters in the course textbook (with the exception of the first three topics, for which I will post slide on the course website). I expect that you read the course textbook in preparation for the lectures, the pop quizzes may cover material assigned as homework reading.