Instructor
Thomas Kunz

TAs
TBA

Office Hours
Thursdays 3-4 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. 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 WWW exercises (markup, styling, etc.) and programming exercises. Programming will be in JavaScript (client-side) and PHP (server-side), and will involve querying an SQL database. The official undergraduate calendar description can be found at http://www.carleton.ca/cuuc/courses/SYSC/.

Learning Outcomes

- Understand the WWW architecture and its core transport protocol
- Design a website using appropriate HTML5 markup
- Design a website layout with CSS, understand the importance of separating content and presentation
- Solve client-side input validation with JavaScript
- Manage the displayed content in a browse via JavaScript and DOM
- Program the server-side component of a WWW application with PHP
- Integrate SQL into a WWW application (on the server side)
- Manage state information: session state, more permanent state information
- Understand the role of XML (and related technologies such as AJAX, XSL, XPATH) vs. JSON for data
exchangeAble to use and to define a Web Service
- Solve security threads to a WWW application by applying appropriate solutions

Graduate Attributes
- Communication Networks
- 4.4 Design solution(s)
- 4.5 Design implementation / Task(s) definition

Course Web Site
http://kunz-pc.sce.carleton.ca/sysc4504/

Textbook and References

Evaluation and Marking Scheme
Students will be evaluated by means of assignments, a midterm exam, and a final exam. The midterm exam will be November 2, either from 4 to 5:30 pm (if I can get a room at that time) or alternatively from 6 to 7:30 pm. 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, a deferred midterm exam will be scheduled. The final exam will be scheduled during the university exam period in December.

There will be a number of assignments and labs. Doing those is the best way to learn the course material, so students are encouraged not to “write them off” just because of its relative low weight in the overall grading scheme. Labs are due at the end of the scheduled lab, assignment due dates will be clearly stated on the assignment handouts. 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, cuLearn maintains a discussion topic for each assignment, which will be monitored by the TA(s) and myself.
To pass the course, a student must 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):

<table>
<thead>
<tr>
<th>Weight</th>
<th>Assignment 1</th>
<th>Assignment 2</th>
<th>Assignment 3</th>
<th>Labs (6 in total)</th>
<th>Midterm</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>2% each</td>
<td>23%</td>
<td>50%</td>
</tr>
<tr>
<td>Available</td>
<td>September 26</td>
<td>October 17</td>
<td>November 14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Due</td>
<td>October 17, noon</td>
<td>November 14, noon</td>
<td>December 5, noon</td>
<td>Nov. 2</td>
<td>December</td>
<td></td>
</tr>
</tbody>
</table>

**Labs**

For each of the 6 labs during the term (labs are in odd weeks only), there will be a lab sheet with exercises to work through. Then, there will be a lab assignment that you will need to hand in (through cuLearn) for the lab credit. I will post the lab worksheets on cuLearn before the labs, to allow you to study them as a preparation for the lab (but not the assignment part). With the lab being scheduled for Mondays, the overall sequence of lab dates is a bit odd (starts early, and includes the last day of classes to make up for Thanksgiving, with a 5 week break in October). The lab assignments will cover the following topics:

<table>
<thead>
<tr>
<th>Lab</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab 1</td>
<td>September 10</td>
<td>HTML</td>
</tr>
<tr>
<td>Lab 2</td>
<td>September 24</td>
<td>CSS</td>
</tr>
<tr>
<td>Lab 3</td>
<td>October 29</td>
<td>JavaScript</td>
</tr>
<tr>
<td>Lab 4</td>
<td>November 12</td>
<td>PHP</td>
</tr>
<tr>
<td>Lab 5</td>
<td>November 26</td>
<td>SQL</td>
</tr>
<tr>
<td>Lab 6</td>
<td>December 7</td>
<td>Managing State</td>
</tr>
</tbody>
</table>

**Exams**

The final examination is for evaluation purposes only and will not be returned to students. You will be able to make arrangements with the instructor or with the department office to see your marked final examination after the final grades have been made available.

**General Regulations**

- **Copyright on Course Materials**: The materials created for this course (including course outline, slides, posted notes, labs, project, assignments, quizzes, exams and solutions) are intended for personal use and may not be reproduced or redistributed or posted on any web site.
without prior written permission from the author(s).

- **Attendance**: Students are expected to attend all lectures and lab periods. The University requires students to have a conflict-free timetable. For more information, see the current Undergraduate Calendar, Academic Regulations of the University, Section 1.2, Course Selection and Registration and Section 1.5, Deregistration. Requests to accommodate a missed midterm exam, lab periods, etc., because of conflicts with jobs or vacation plans will not be considered.

- **Health and Safety**: Every student should have a copy of our Health and Safety Manual. A PDF copy of this manual is available online: http://sce.carleton.ca/courses/health-and-safety.pdf.

- **Deferred Term Work**: Students who claim illness, injury or other extraordinary circumstances beyond their control as a reason for missed term work are held responsible for immediately informing the instructor concerned and for making alternate arrangements with the instructor and in all cases this must occur no later than three (3.0) working days after the term work was due. The alternate arrangement must be made before the last day of classes in the term as published in the academic schedule. For more information, see the Academic Regulations of the University, Section 2.6, Deferred Term Work.

- **Appeal of Grades**: The processes for dealing with questions or concerns regarding grades assigned during the term and final grades is described in the Academic Regulations of the University, Section 2.7, Informal Appeal of Grade and Section 2.8, Formal Appeal of Grade.

- **Academic Integrity**: Students should be aware of their obligations with regards to academic integrity. Please review the information about academic integrity at: https://carleton.ca/registrar/academic-integrity/ This site also contains a link to the complete Academic Integrity Policy that was approved by the University’s Senate.

- **Academic Accommodations**: Requests for Academic 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
    Please contact your instructor 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: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf
  - Religious obligation
    Please contact your instructor 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: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf
  - Academic Accommodations for Students with Disabilities
    If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. carleton.caPMC
  - Survivors of Sexual Violence
    As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton’s Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support
Accommodation for Student Activities
Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor 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. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

Additional Information

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 Week-By-Week Schedule

1. How the Web Works
2. Introduction to HTML and CSS
3. HTML Tables and Forms
4. JavaScript 1: Language Fundamentals
5. JavaScript 2: Using JavaScript
6. JavaScript Frameworks
7. Introduction to Server-Side Development with PHP
8. PHP Arrays and Superglobals
9. Working with Databases
10. Error Handling and Validation
11. Managing State and Security
12. XML Processing and Web Services (optional, depending on time)