Web-centric Computing

Dalhousie University
Computer Science 4173 (CRN 21598)*

Winter 2007

Lecture Time:	Mon., Wed., & Fri. 12:35 – 1:25pm (and tutorials on some Monday evenings 6:05 – 7:25pm)
Lecture Rooms:	(afternoons) Life Sciences Centre room C334 (evenings) Computer Science Auditorium
Professor:	James Blustein Office Hours: Tues., Wed., Thurs. 10:05 – 11:05am, or by appointment
Office:	Computer Science 223
E-mail:	⟨jamie@cs.dal.ca⟩
Telephone:	494-6104
Course website:	⟨URL:http://www.cs.dal.ca/~jamie/CS4173/⟩
Recommended Textbooks:	(1) HTTP: The Definitive Guide by David Gourley & Briant Totty (with others). © 2002 by O'Reilley & Assocs. ISBN 1-56592-509-2. (2) Programming the World Wide Web (third ed.) by Robert W. Sebesta © 2006 Published by Addison-Wesley. ISBN 0-321-30332-6.

Assessment Components:	Assignments, Quizzes, & Homework	30%
	Midterm (Mon. 05 Feb.)	25% or 35%
	Final exam	45% or 35%
	The midterm will begin at 6:05pm	

*3 credit hours, undergraduate course, syllabus version 31 December 2006 (1a).
The schedule and procedures in this syllabus are subject to change in the event of extenuating circumstances.

1 Course Content and Goals

Students who successfully complete this course will be equipped to understand a wide range of WWW-based technologies including those that we will not be discussing in class.

We will examine exemplars of certain types of WWW-based technologies but we will not use everything. If you only want to learn a particular technology (ASP for example) then you should read a book or online tutorial and write some code yourself rather than taking this course. However if you want to understand the wide range of WWW-based technologies (server-side programming languages in the case of ASP), standards and their capabilities and limitations, and be ready to usefully apply ones that have not been invented yet, then this course will benefit you.

To begin we must understand in what way the WWW is a type of heterogeneous distributed system. Then we can answer the following questions:

- How is programming for the WWW similar to programming for monolithic systems?
- How is it different?
- When are those differences important?
- What are relevant standards (as mandated by standards bodies, and in practice)?

The WWW is not exactly like any other system. Sometimes it is used to present information to people and sometimes it is used to present information to computer programs (for example agents and search engines).

As students of computer science we often think of the WWW as only a tool for providing information, sharing resources (e.g. recordings of TV programmes and music), or supporting electronic commerce (buying and selling goods and services). One common characteristic of all of those applications of the WWW is that they are webpages (or websites) produced by a single entity (that is one person or organization).

The WWW supports those activities and more. It also enables collaborative work. An interesting example of collaborative Wikis. Students will understand at least the technology necessary to make such tools function.

Unlike most programs we write for people to use, we do not know how people will get access to the documents (and program output) we produce on the WWW. Someone may view our webpage on a large desktop computer screen while someone else may hear it read to them as they drive a car. How can we use the technologies of the WWW so that people who use our webpages directly and those who use search engines, etc. can all get what we want them to get from our webpages.

- What special challenges are there for user interface (UI) design on the WWW?
- How can we simplify our job as UI developers without making interfaces that are difficult or impossible to use?

As a class we will cover topics that you will need to know to accomplish those goals in lectures and through demonstrations. Assignments along the way will help you focus your attention and gain practical experience with aspects of the course before you confront them outside of the experimental atmosphere of this course. Written tests will give you (the individual student) and me (the professor) feedback about how well you understand the material and where I need to help the class more.

My plan for this course is for me to assign several individual programming homeworks (and at least one group assignment) and to spend much of the lecture time discussing other, less programming oriented, topics. We will discuss homework in class but I expect you to use the print and WWW resources available to you to learn how to complete the assignments.

1.1 Expectations

My rôle of your professor is not to teach as such but to *help you to learn*. You are responsible for your own learning. I will explain and motivate the material. I will give you assignments that will help you to practice and improve your skills. I will try to make the assignments interesting and challenging.

Our time in the classroom will be used for lectures, discussions, quizzes, and work in groups. I expect you to participate meaningfully in all of those activities.

I expected you to attend each class and to be on-time. If you miss a class, for any reason, you are responsible for the material covered, any assignments that were given, and any announcements that were made. I will try to make copies of lecture notes, etc. available at the Killam library, on my website, or both.

A tentative list of topics for us to study is at the end of this syllabus. The list and order may change depending on what the class as a whole has as background knowledge and what I feel is necessary for you to get the most out of the project. Before I lecture about most topics I will assign readings from the textbook or elsewhere for you. You will get the most benefit from the class if you have completed the assigned reading and made notes before the class. If you cannot complete the reading before the lecture and in-class discussion then you should do the reading carefully after class.

1.2 Help

You will find that there are many resources to help you in this class: your professor, the materials provided by your professor, the textbook, material in the library and on the WWW, and the other students. In the end however the responsibility for learning is yours. Details of the various assignments will be discussed in class. All students are expected to do their own work!

The office hours listed on the front of this syllabus are times when I will be in or near my office. You may drop-in to discuss anything related to the course during those times. If you want to meet with me at some other times then it is best for you to make appointment, but you can also come to my office in case I have time available right then. You can make appointments in person (e.g. after class or during my office hour), by e-mail or by telephone.

2 Tentative Outline

Below are the topics that I expect we will cover this semester.

Since this a senior undergraduate class we will studying concepts and ideas. We will however begin with a review of some details of WWW history and standards. You will be expected to learn many of the other relevant details yourself.

I expect much of the first test will be about those details. Later tests will require you to show how you use your knowledge of those details to solve problems. Certain abstract principles (such

as accessibility, the user experience, security, interaction with databases and search engines) might be dealt with throughout the course.

2.1 Topics

1. Background
2. HTTP and web servers
3. Accessibility of web sites
4. Client-side programming
5. Server-side programming
6. Caching and mirroring
7. Content-based applications
8. Security issues and strategies
9. Future directions for the WWW

A more detailed list of the tentative topics is on the web at ⟨URL:http://www.cs.dal.ca/~jamie/course/CS/4173/Course/goals/topics.html⟩.

2.2 Calendar

	Week														
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	
Su		7	14	21	28	4	11	18	25	4	11	18	25	1	Su
M		8	15	22	29	***5***	12	*19*	26	5	12	19	26	2	M
Tu		9	16	23	30	6	13	*20*	27	6	13	20	27	3	Tu
W	3	10	17	24	31	7	14	*21*	28	7	14	21	28	4	W
Th	4	11	18	25	1	8	15	22	1	8	15	22	29	5	Th
F	5	12	19	26	~~2~~	9	16	*23*	2	9	16	23	30		F
Sa	6	13	20	27	3	10	17	24	3	10	17	24	31		Sa
	Jan				Feb				Mar					Apr	

Note: There will be no classes between *19 – 23 February*;
Dal will be closed on 02 February (for Munro Day).

3 Policies and Rules

Students are subject to all applicable University and Faculty policies. By your enrollment in this course beyond the first day you are deemed to be fully aware of all such obligations and responsibilities so most of them will not be repeated here. I do want to draw your particular attention to some of them however.

Any student wishing to discuss an **accommodation on the basis of permanent or temporary disability** is asked to register with the Student Accessibility Services (formerly known as the office for Services for Students With Disabilities) in room G28 of the Killam Library, or by telephone at 494-2836.

Your grade should reflect how much you can demonstrate you know and can apply about the topics of this course. If you have registered with that Office then I will be guided by their advice in deciding how you are asked to demonstrate that knowledge.

Plagiarism will not be tolerated. You must do your own work and provide proper credit when quoting or paraphrasing the work of others. This policy applies equally to text, images, and program code. You may use any standard style guide you wish so long as you use it consistently. The

reference desk at the Killam library or your professor can offer suggestions for style guides. When citing webpages you must include the following: (1) the address of the webpage, (2) the author of the webpage or a note that it is anonymous, (3) the date that the page was last updated or, if that is not available, the date that you read the page and a note to that effect.

3.1 Assignments and Homework

Late assignments and homework will be accepted at the beginning of class only. If you are late for class your homework will not be accepted. The highest grade that late work will be awarded is 80% of the maximum grade.

For homework assignment that I ask to be submitted on paper: **Multi-page homeworks** must be neatly stapled and your name and row number must appear on the top sheet. Homeworks that are not stapled and documented will not receive full marks.

Some of your homework will be submitted by computer. I will inform you of the details of those submissions later.

3.2 Quizzes, Tests, and Exams

All tests, and quizzes will be held in the classroom. Exams will be scheduled by the Faculty and University. I will give you at least 24 hours notice of any quiz. I will inform you (by an announcement in class, note in the Announcement section of the website, or e-mail) of any Monday evening class, test, tutorial, etc.

No make-up tests will be given without my permission. You will not get my permission without either prior notice of absence, a detailed letter from your physician, or evidence of a serious family crisis that required your attention. Make-up exams and tests may be administered in an essay form.

No corrections to grades for a test will be considered after the date of the following test or the last day of classes. For example, corrections to your grade to Test #1 can only be considered up until the date announced for Test #2. Similarly corrections to Test #2 grades will not be considered after the date of the final class.

3.3 Grading Scale

The definitions of grade levels are in the Dalhousie University 2005/2006 Undergraduate Calendar. I am restricted by the policy of the Faculty of Computer Science from having more than 20% of the class get A-level grades, except in wholly unusual circumstances.

3.3.1 Assignments Are Essential

You must have submitted at least 80% of the assignments and homeworks (within four days of their being due) to earn a grade higher than C^+.

3.3.2 Accessibility of Webpages

You are responsible for making accessible websites. The Faculty provides AccessValet, an excellent automated checker that can help you to find many accessibility problems with your sites.

Your assignments will be checked for accessibility at random by the grader throughout the course. Up to 7% of your final grade can be lost if your assignments are found not to meet the WAI's double-A accessibilty level, i.e. if your webpages are not accessible you cannot earn an A^+.

3.3.3 Late Policy

Late work will be penalized 10% per day (or part thereof). Saturday and Sunday will count as one day for this policy. You may not receive credit for work that is more than 4 days late. The highest grade that late work will be awarded is 80% of the maximum grade, e.g. an assignment that would have been worth 90% on time but is 1 day late will earn a grade of 80%, and an assignment that would have been worth 75% on time but is is 1 day late will earn a grade of 65%.
