CSC309H1S 20231 (All Sections): Programming on the Web

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Overview

An introduction to software development on the web. The course covers the development of programs that operate on the web and survey of technological alternatives, with emphasis on modern web development technologies. Concepts, including the Internet and the web, static client content, dynamic client content, dynamically served content, n-tiered architectures, web development processes, and security on the web, are discussed. Assignments involve increasingly more complex web-based programs, and the term ends with an open-ended project for students to showcase their mastery over the course content.

Learning outcomes

At the end of the course, you will:

- Understand the concept of web, servers, and clients
- Gain deep knowledge of various components in a modern website (back-end and front-end)
- Learn how to create a static website with HTML, CSS, and JavaScript
- Learn how develop the back-end of a website with Django
- Learn how to develop the front-end of a website with React

Requirements

- Programming experience & Python (CSC108)
- Advanced programming & OOP (CSC207 & CSC148)
- Basic shell & system programming (CSC209)
- **Corequisite** : Database systems (CSC343). Note that this is not strictly enforced, but highly recommended.

This course is suitable for anyone interested in learning web programming and may be seeking a relevant job in the future. It assumes no prior knowledge or experience in web development. So everything will be discussed from the very basics.

Course Information

Instructor:

Name: Kuei (Jack) Sun

Office: BA4204A

Office Hours: Available upon request (over Zoom or physical)

Communications:

Course Email: **csc309-2023-01@cs.toronto.edu (mailto:csc309-2023-01@cs.toronto.edu)**

Please use email for personal issues and **Piazza (https://piazza.com/class/lcfnmas0pjs2sw)** for all other course-related questions. I try to respond to email by the end of the next day. However, due to volume, it may take longer, especially on weekends. (I am often not able to answer email more than once on the weekend.)

Head TA: Huakun Shen

Email: **huakun.shen@utoronto.ca (mailto:huakun.shen@utoronto.ca)**

Please email the head TA about anything grading related, such as assignment remark request, extension and special consideration requests.

Lectures

All lectures will be held in-person at the locations indicated.

LEC0101 **LEC2001**	Monday 10-11 a.m., **KP 108 (https://map.utoronto.ca/?id=1809#!m/494488)**	Wednesday 10-11 a.m., **KP 108 (https://map.utoronto.ca/?id=1809#!m/494488)**	Friday 10-11 a.m., **KP 108 (https://map.utoronto.ca/?id=1809#!m/494488)**
LEC5101 **LEC2501**	Monday 6-9 p.m., **BA 1190 (https://map.utoronto.ca/?id=1809#!m/494470)**	**(https://map.utoronto.ca/?id=1809#!m/494470)**	

Exception: Class on Friday Apr 7th is canceled due to Good Friday. Therefore, we will also cancel the last hour of lecture for LEC5101 (class on Monday Apr 3rd will be shortened to 6-8pm).

Lecture Format

In the lectures, we will cover core material of the course that may show up on the midterm and the final. There are some in-class exercises that should be completed weekly. Its due date is always Sunday night, following the lectures of the week. The last hour of every week's lecture will be focused on helping you with understanding the assignments or the projects. There are no tutorials in this course; however, some lectures may be hosted at the Bahen Teaching Labs. The exact time and date of the exceptions will be posted one week in advance.

This course, including your participation, will be recorded on video and will be available to students in the course for viewing remotely and after each session.

Course videos and materials belong to your instructors, the University, and/or other sources depending on the specific facts of each situation, and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose without the explicit permission of the instructors.

For questions about recording and use of videos in which you appear please contact your instructors.

Textbook(s):

There are no textbooks for this course. You can Google related keywords to find reference manuals on each major topic. Midterm and final exam material will solely be sourced from the lecture notes.

Website and Discussion Board:

You will be able to find all course materials from this Quercus site. The Piazza discussion board (linked from Quercus) is required reading. Please use Piazza to ask general questions, and remember to search to check if someone else has already answered the question. The instructor and/or TAs will be monitoring it daily. Please do not ask general questions privately. Private posts are intended for showing personal work, e.g., source code, to the instructor/TA, or discussing personal matters. You may post anonymously if you are concerned about revealing your identity to the class. Please do not be afraid to ask questions. There is no such thing as a dumb question.

Marking Scheme

ITEM	WEIGHT
Lecture Exercises (x10)	2 %
Assignments (x3) • A1: 8% • A2: 10% • A3: 10%	28 %
Term Project (x3 phases) • Phase 1: 8% • Phase 2: 10% • Phase 3: 15%	33 %
Midterm Test	12 %
Final Exam	25 %

Detailed Description

Lecture Exercises 2%:

There will be in-class exercises associated with the lectures during most classes. These will typically take the form of quizzes on Quercus. In other words, you will get full marks for an exercise if we can tell that you have made a serious attempt at it. You may not get credit for the exercise if you do nothing and just submit. There are 12 weeks in this course and also 12 lecture exercises; however, you only need to hand in 10 exercises on time to receive full marks in this category. We strongly encourage you to do these exercises in class to get a clearer understanding of the material. We welcome questions about these activities during the synchronous lectures. All lecture exercises for the week will be due on the immediate Sunday at the end of the day (11:59:59 p.m). This is the same for both lecture sections.

Programming Assignments (28%):

Over the term, you will complete 3 assignments that consist of problems that challenge your understanding of the concepts and will be auto-graded. **All assignments must be completed individually**. All assignments must be submitted by checking your work into your **MarkUs (https://markus.teach.cs.toronto.edu/2023-01)** repository. Assignment 1 is worth 8% while assignment 2 and 3 are worth 10% each.

Term Project (33%):

The project simulates a real-world website that you are likely to develop in the future as a freelance web developer. Even though the scope is considerably small, it is designed to give a sense about how creating a real website and being a full-stack developer would look like. For the project, you can make groups of 2 or 3 members. You could also do it alone, but it is not recommended as the workload might be excessive for one person. The project is divided into 3 phases, with domains similar to the corresponding assignment.

Each phase is graded through an interview with a TA during which they work with your website to check if the requirements are implemented correctly, and also ask each member questions about their role and the code they have implemented. The grade for the former one will be shared between all members, while the latter one yield to individual grades, based on each member's participation and understanding of the entire submission.

There are 3 phases to the project. The phases have different weights: 8% for phase one, 10% for phase 2, and 15% for phase 3.

Midterm Test (12%):

There will be one 50-minute test on Monday February 27th, which can be completed during your regular lecture time slot, or anytime between 10am and 7pm that day (you have to start latest at 6:10pm to get the full 50 minute). Midterm coverage will be the course content taught prior to reading week. It will be done completely online and **open book**. The lecture hour from 10-11am for LEC0101 will be canceled,

as well as 6-7pm for LEC5101. A reminder that the class for LEC5101 from 7-9pm will NOT be canceled. The exact detail of the midterm format will be released one week before the start of the reading week. You can do the midterm at home if you wish. However, I will be available the lecture room during the regular time slot if you prefer to write in person. In this case, you will need to bring a laptop or tablet with Internet connectivity.

Final Exam (25%):

The Final Exam will be scheduled by Arts & Sciences in the final assessment period. It will cover all course material, including topics that were tested on the midterm test and questions about the assignments. The final exam format will be **open book**, and there *is no autofail* policy.

Remark Policy

If you feel there was an error in the marking of an assignment, you may request a remark through email to the course instructor, or the lead TA. You must give a specific reason for the request, referring to a possible error or omission by the marker. Stating specific potential grading errors for your remark request is mandatory for us to even consider your request. However, we will review your entire work, not just the items you pointed out. Please keep in mind that your grade may stay the same, may increase, or may even decrease, after your remark request is assessed. Remark requests must be received **within one week** of when you received the grade for that item.

Missed Term Work

To request special consideration, send supporting documentation to the instructor at least one week in advance.

In the event of an illness or other catastrophe, please contact me and provide supporting documentation within one week of the missed work. You must also declare your absence on Acorn. Do not wait until the due date has passed. It is always easier to make alternate arrangements before the due date.

Religious Holidays:

If a religious holiday will keep you from completing any assigned work, please let us know as soon as possible (but no later than two weeks before the due date), and we will work out a mutually agreeable accommodation.

Late Work

All assignments and project milestones are submitted electronically and are due at **11:59:59 p.m. sharp** on the date of the deadline. All late submission will lose 10% per day, and any submission later than 5 days past the due date will not be accepted. No exceptions will be granted for any sort of submission error. You are expected to submit at least one full day before the actual due date. Make sure you start

early and have a good understanding of the assignment requirements to avoid any foreseeable or unforeseeable issues.

Academic Integrity

Honesty and fairness are fundamental to the University of Toronto's mission. Plagiarism is a form of academic fraud and is treated very seriously. Please refer to the University of Toronto **Academic Integrity website (https://www.academicintegrity.utoronto.ca/)** and read the **Code of Behaviour on Academic Matters (https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019)** . Here are a few guidelines to help you avoid plagiarism.

Assignments

Assignments are **individual works** which means that you will not be allowed to seek advice from other students or copy/paste someone else's code, even open source codes from the internet. However, you are allowed to look at online resources, tutorials, and Q&A; websites over the course of solving the problems. The entire code must be written by yourself. AI generated code is strictly forbidden and any violation will be persecuted with the fullest extent of the regulation.

Project

Unlike the assignments, you are allowed to download packages or use open source codes from the internet for the project. However, sharing even a small piece of code to other teams is strictly prohibited (either giving to or taking from them). Online codes must include a reference to the webpage they are taken from.

Accessibility Needs:

The University of Toronto is committed to accessibility. If you require accommodations for a disability or have any accessibility concerns about the course, the classroom, or course materials, please contact **Accessibility Services (https://studentlife.utoronto.ca/department/accessibility-services/)** as soon as possible via email (**accessibility.services@utoronto.ca (mailto:accessibility.services@utoronto.ca)**) or phone (**416-978-8060 (tel:416-978-8060)**).

Course Summary:

Date	Details	Due
Sun Jan 15, 2023	**E1: Introduction to Web Programming** (https://q.utoronto.ca/courses/293527/assignments/1002476)	due by 11:59pm
Sun Jan 29, 2023	**A1: Static Web Page** (https://q.utoronto.ca/courses/293527/assignments/1002292)	due by 11:59pm

Date	Details	Due
Sun Feb 5, 2023	P1: UI Design (https://q.utoronto.ca/courses/293527/assignments/1002366)	due by 11:59pm
Mon Feb 27, 2023	M1 (https://q.utoronto.ca/courses/293527/assignments/1002398)	due by 11:59pm
Sun Mar 5, 2023	A2: Server-Side Scripting (https://q.utoronto.ca/courses/293527/assignments/1002301)	due by 11:59pm
Sun Mar 12, 2023	P2: Django Backend (https://q.utoronto.ca/courses/293527/assignments/1002373)	due by 11:59pm
Sun Apr 2, 2023	A3: Client-Side Scripting (https://q.utoronto.ca/courses/293527/assignments/1002347)	due by 11:59pm
Sun Apr 9, 2023	P3: React Frontend (https://q.utoronto.ca/courses/293527/assignments/1002378)	due by 11:59pm