

## Course Syllabus



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.

### Prerequisites

- Programming experience & Python (CSC108)
- Advanced programming & OOP (CSC207 & CSC148)
- Basic shell & systems 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.

### Learning outcomes

At the end of the course, you should be able to:

- Explain the structure of the web and how HTTP works
- Create web pages with HTML, CSS, and JavaScript
- Build interactive frontend applications with React and React Router.
- Build backend applications using Express.js, and design and implement RESTful APIs.
- Work with Prisma ORM to store, retrieve, and manage data, and implement authentication using JWT.
- Identify and prevent common web security issues
- Follow best practices in web development to deploy full-stack web applications

## Course Information

**Instructor:** Kuei (Jack) Sun

**Personal Office:** BA 4231

**Office Hour:** Mondays and Wednesdays 1:30pm to 3pm, **BA 4290**, starting from week 2.

*Virtual or physical meetings may be scheduled outside of regular office hours by request.*

**Course Email:** [csc309-2026-01@cs.toronto.edu](mailto:csc309-2026-01@cs.toronto.edu) (<mailto:csc309-2026-01@cs.toronto.edu>)

Please use email for personal issues and Piazza for all other course-related questions. We will try to respond to email by the end of the next day. However, due to volume, it may take longer, especially on weekends. (We are often not able to answer email more than once on the weekend.)

## Class Meetings

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

All Sections (LEC0101 and LEC2001)	
Tuesday 3-5pm	<a href="https://map.utoronto.ca/?id=1809#m/982031?share">BA 1170 (https://map.utoronto.ca/?id=1809#m/982031?share)</a>

In lectures, we will cover the core material of the course. You may be asked to participate through in-class exercises and activities. Lectures will be recorded and the recordings will be posted later in the week.

Recordings are provided as a supplement to support your learning, and are not a replacement for attending class. We strongly encourage students to attend lectures in person, as participation, real-time interaction with the instructor and peers, and in-class activities are important for mastering the material and connecting with the course community.

### Copyright Notice

Course videos and materials belong to your instructor, 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 videos and materials for your academic use, but you should not copy, share, or use them for any other purpose without the explicit permission of the instructor.

### Tutorials and TA Office Hours:

The weekly tutorial sessions take place in the CS lab rooms, **starting week 1**. TAs will be available Wednesdays from 3pm to 4pm in the rooms listed below.

All Sections (LEC0101 and LEC2001)	
Wednesday 3-4pm	<a href="https://map.utoronto.ca/?id=1809#m/982031?share">BA3175 (https://map.utoronto.ca/?id=1809#m/982031?share)</a> , <a href="https://map.utoronto.ca/?id=1809#m/982031?share">BA 3185 (https://map.utoronto.ca/?id=1809#m/982031?share)</a> , and <a href="https://map.utoronto.ca/?id=1809#m/982031?share">BA 3195 (https://map.utoronto.ca/?id=1809#m/982031?share)</a>

TAs are available to help students with tutorial exercises and assignment questions during tutorial sessions. TAs also host regular office hours in **BA2270** and are available online. See the Office Hour Schedule (TBA) for details.

### 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 and tutorial content.

## Communications

The course website will be maintained on Quercus and is required reading. It contains official announcements, lecture notes, assignment handouts, tutorial materials, and course policies, along with a link to the Piazza discussion board. Piazza is the best place to ask questions and receive fast responses, especially when you participate actively.

Please follow the guidelines below for appropriate use of the discussion board:

- **Check existing posts first.** Use search to avoid duplicate topics before creating a new post or emailing the course team.
- **Do not share any part of your assignment solution on Piazza.** Doing so can lead to plagiarism allegations and may result in an Academic Offence.
- **Keep posts course-relevant and non-personal.** Avoid off-topic or personal content. If your concern is personal (e.g., illness-related absence), email the course team directly instead.
- **Use clear, unique email subjects when emailing.** If you need to send an email, include your student number in the subject (example: Midterm Remark Request - 1000123456) to prevent email clients from collapsing different student requests into one thread.

For all emails, include your full name, student number, tutorid, and lecture section in the message body.

## Marking Scheme

ITEM	EACH WORTH	TOTAL WEIGHT
Tutorial Exercises (12)	1.25%	15 %
Assignment 1	--	9 %
Assignment 2	--	12 %
Assignment 3	--	13 %
Midterms (2)	10 %	20 %
Final Exam	--	30 %
Surveys (4)	0.25 %	1 %

## Detailed Description

### Participation Surveys (1%):

This course includes participation in four short research surveys aimed at evaluating the course content and delivery. However, you have the option to opt out of having your responses included in the research study. If you choose to opt out, your data will not be used for research purposes, but you will still receive the participation points for completing the survey. Your feedback is invaluable in shaping tools that support student learning, and all responses will remain confidential. Opting out will not affect your grade or standing in the course. If you wish to opt out, please send the request to the course email.

### Tutorial Exercises (15%):

For each tutorial, you will be asked to turn in a small piece of work or to work on an activity during the tutorial. These exercises will be auto-graded and should be completed individually. Where possible, you will be allowed to resubmit and we will take your final score. Many of these will be directly related to the assignments.

Tutorial exercises are due on the following Monday at the end of the day (11:59 p.m.) with one exception: tutorials for the first 3 weeks are all due on Monday, January 26 at 11:59 p.m., to allow waitlisted students to complete them.

### Individual Assignment (9%):

In the first month of this course, you will complete an assignment (i.e., A1) that requires you to build a static website in HTML and CSS. This assignment will be auto-graded and must be completed individually. All work must be submitted by checking your code into your MarkUs repository for assignment 1.

### Term Project (25%):

The term project simulates a realistic freelance full-stack web development task. The goal is to give you a clear picture of what building a production-style website looks like, including API design, client-server integration, and end-to-end ownership of both backend and frontend. You may form a group of up to 3 members, or work alone. Solo work is allowed, but not recommended, as the workload can be high for one person.

The term project has two components: A2 and A3. All work must be submitted by checking your code into your group's MarkUs repository for the respective assignments.

For assignment 2 (A2), you will implement REST APIs following a well defined set of specifications. This part focuses on implementing correct server-side logic. Grading is fully automated by running the automated tester on MarkUs.

For assignment 3 (A3), you will implement the client interface that connects to the backend you built in A2. This part emphasizes UI design and usability, where you have creative control over the look-and-feel of your website. After the deadline, your final deliverable will be graded through a TA interview that validates functional requirements and policy compliance (interview booking link TBA).

In most cases, all group members receive the same grade. If your group encounters unfair contribution or workload distribution, report the issue to the instructor by email.

As a responsible team member, you must help ensure that your group's submission complies with the academic integrity policies of this course. If you suspect plagiarism, unauthorized aid, or inequitable work distribution, you must report it to the course team by email immediately. Work that is submitted for grading and violates course policy may result in all group members being held accountable for academic offence.

### Competition

We will run a competition for the best built website. Senior staff from an industry partner will review all submissions and select their favorite. The winning team may enroll in CSC494 (or an equivalent project course) with the course instructor to participate in continued development of the project for real-world deployment and use.

### Midterm Tests (20%):

There will be two 60-minute tests, on Wednesday, **February 4** and Wednesday, **March 4**. Each test covers material up to the week before the test date, but is not cumulative. The first midterm will cover Weeks 1–4, and the second midterm will cover Weeks 5-8. Content may include lectures, exercises, activities, and assignments due before the test date. To request to write in the makeup section due to scheduling conflict, please use the [Midterm Scheduling Change Request Form](https://forms.office.com/r/t8fumrPGE3) [☞](https://forms.office.com/r/t8fumrPGE3) (https://forms.office.com/r/t8fumrPGE3). Requests must be made **one week** before the scheduled midterm date to be considered.

	Midterm 1 - February 4th	Midterm 2 - March 4th
<b>ALL SECTIONS</b>	Wednesday 2:30pm - 4pm, EX320 / HS618	Wednesday 2:30pm - 4pm, FE 114
<b>MAKEUP</b>	Wednesday 6pm - 7:30pm, ROOM TBA	Wednesday 6pm - 7:30pm, ROOM TBA

The midterm will be closed book. You may only bring a non-programmable calculator and no aid sheets are allowed. **If you cannot write a midterm test due to extraordinary circumstances beyond your control, please submit the [Special Consideration Form for Missed Midterm](https://forms.office.com/r/vkuKwirlXc) [☞](https://forms.office.com/r/vkuKwirlXc) (https://forms.office.com/r/vkuKwirlXc) with the supporting documentation to request a special consideration as soon as possible. Special consideration requests will be evaluated on a case-by-case basis.**

### Final Exam (30%):

The final exam will be scheduled by the Faculty of Arts & Sciences sometime in March. It is comprehensive, covering all course material, including topics tested on the midterms and material from the assignments. The exam will be closed book. You may bring only a non-programmable calculator and no aid sheets are allowed.

A minimum grade of 35% on the final exam is required to pass the course (post-curve).

## Policies

### Minimum Standards for Submitted Work:

For your tutorial exercise or assignment to be graded, it must meet the minimum standards of a professional computer scientist. All required files must be submitted. If the submission contains a web page, it should work on either Firefox 146.01 or Google Chrome 143.0.7499.169/170. If the submission needs to run on Node.js, it should work on v24.12.0 LTS. Last-minute difficulties with git can easily be avoided by ensuring all files are added to the repository well before the deadline, and that you know how to commit and push them. Submissions that are missing files or do not run correctly will receive a grade of 0.

### Late Work:

All assignments (tutorial exercises, individual assignments, and group assignments) must be submitted electronically by **11:59:59 p.m. sharp** on the due date. Each student receives **ten 1-day grace tokens** for the semester, which may be applied to any combination of tutorial exercises and assignments, up to a maximum extension of **5 total days** per assignment. For example, you could use 5 tokens on a single assignment to gain a five-day extension or spread them across multiple assignments. Submitting an assignment even one second late will automatically use one grace token. Once your tokens are exhausted, late submissions will not be accepted unless under exceptional circumstances. **If you find yourself in a serious medical or emergency situation where use of grace tokens is not sufficient, you will have the opportunity to submit the [Assignment Special Consideration Request Form](https://forms.office.com/r/YWbwdhtrR) to explain your circumstances and your specific special consideration request. Special consideration requests will be evaluated on a case-by-case basis.** Please be warned that once an extension is granted for an assignment, you **may not use grace tokens on top of the extension**, unless you are registered with Accessibility Services.

For group assignments, a grace token will be deducted from all team members for each extra 1-day period. As a result, you can use at most the minimum number of grace tokens between the team members.

The grace tokens are provided to help you deal with minor, unforeseen disruptions to your work schedule. However, instructional staff may not provide office hours or answer questions about the assignments after the deadline has passed. Make sure you start early and have a good understanding of the assignment requirements, even if you expect to use the grace period to complete your work.

Please note that a submission made at 12:00:00 a.m. after the due date will be considered late. You should ensure that your work is not submitted at the very last second. Since you will be using version control, it is very easy to commit regularly to avoid running into the deadline.

### 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.

### Emergencies:

In the event of an illness or other catastrophe that affects your ability to do your academic work, consult the course instructors right away. Normally, you will be asked for documentation in support of your specific circumstances. This documentation may take the following forms:

- Absence declaration via [ACORN \(https://www.acorn.utoronto.ca/\)](https://www.acorn.utoronto.ca/)
  - The University has updated its policies on the use of the Absence Declaration, which can now only be used in case of (a) a health condition or personal injury, (b) a personal or family emergency, or (c) bereavement. Students may submit **one absence declaration per academic term**, to declare an absence for a **maximum period of seven consecutive calendar days**. The seven-day declaration period can be retroactive for up to six days in the past, or up to six days in the future, but it must cover the period in which the missed academic obligation occurred.
- [U of T Verification of Illness or Injury Form \(VOI\) \(http://www.illnessverification.utoronto.ca/index.php\)](http://www.illnessverification.utoronto.ca/index.php)
  - The VOI indicates the impact and severity of the illness, while protecting your privacy about the details of the nature of the illness. If you cannot submit a VOI due to limits on terms of use, you can submit a different form (like a letter from a doctor), as long as it is an original document, and it contains the same information as the VOI (including dates, academic impact, practitioner's signature, phone and registration number). To download a copy of the VOI, please see <http://www.illnessverification.utoronto.ca> (<http://www.illnessverification.utoronto.ca/index.php>).
- College Registrar's letter
- Letter of Academic Accommodation from Accessibility Services

For more information on documentation of absences for Arts and Science students, including limitations on the use of the Absence Declaration tool, refer to the [A&S Student Absences \(http://www.artsci.utoronto.ca/absence\)](http://www.artsci.utoronto.ca/absence) page. It is always easier to make alternate arrangements before a due date, so please inform us as soon as you know that you will need accommodation. If you get a concussion, break your hand, or suffer some other acute injury, you should register with Accessibility Services as soon as possible.

### Remark Requests:

If you believe there was an error in the grading of your assignment, you may submit a remark request through MarkUs. Your request must clearly state one of the following:

- Marking error:** Clearly and concisely describe the specific error you believe occurred in the grading.
- Minor submission issue:** Identify a minor problem in your submission that can be resolved with no more than one line of code, e.g., so that your code would compile again. If your request is accepted under this category, a 20% penalty will be applied.

Remark requests must be submitted within **two weeks** of the marks being released. Please note that remarking may result in an increased grade, no change, or a *decreased grade*.

### Academic Integrity:

All of the work you submit must be your own. Submitting work written by someone else, or sharing your own work for others to submit, is considered plagiarism and is treated as academic fraud. The department uses plagiarism-detection software that compares code across current and past submissions, as well as code available online. Please review the University of Toronto [Academic Integrity website \(https://www.academicintegrity.utoronto.ca/\)](https://www.academicintegrity.utoronto.ca/), and read the [Code of Behaviour on Academic Matters \(https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019\)](https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019).

To help you avoid academic offences, keep the following in mind:

- Do not share or view solutions.** Never look at another student's or group's assignment solution, in whole or in part, and never allow your work to be shared or copied. Maintain strict control of your notes, drafts, and code at all times.
- Discussion is fine, copying is not.** You are encouraged to discuss concepts and study collaboratively, but all submitted work must be written entirely by you. If you want feedback on your code or solutions, only share it with a TA or instructor.
- When in doubt, submit your own work.** It is always better to hand in a partial or incomplete solution and receive a lower grade than to commit an academic offence. An offence can have severe consequences and may delay your progress through your degree.
- Do not look for or reuse solutions online.** Public sources (e.g., GitHub repositories, forums, or blogs) may contain code similar to our assignments. Submitting such code, even with modifications, is plagiarism. Our detection tools can identify these cases.
- Do not use AI-generated code.** The entire code and/or report you submit must be written by you. Submitting any work generated by tools such as ChatGPT, GitHub Copilot, or any other AI system is strictly prohibited and will be treated as an academic offence, with penalties applied to the fullest extent of University regulations.

#### Protect Yourself

Students sometimes receive an academic offence not because they copied, but because they did not protect their own work. To avoid this:

- Do not share accounts.** Never share accounts (e.g., Google Drive, GitHub, ChatGPT). We have caught cases where one student was charged with academic offence because a friend copied their work from a shared chat log.
- Secure your devices.** Password-protect your computer and phone. Always log out of public or shared computers to prevent others from accessing your files.
- Keep your repository private.** Do not publish your assignment solutions online. The assignment handout and starter code are the intellectual property of the course instructors. Making completed assignments publicly accessible, even in modified form, is considered copyright infringement and a breach of academic integrity.
- Know everything your group submits.** Discuss the assignment with your team not only to understand the content, but also to ensure all work is original. If a teammate cannot explain their own code or writing, this may indicate unauthorized or copied work. All group members share responsibility for the final submission, and plagiarism cases may result in an academic offence for the entire team. Stay actively involved and review all components before the submission deadlines.

### Use of Generative AI

You may use GenAI tools to support learning and build understanding, including:

- Asking for explanations of concepts, e.g., "How does the event loop handle concurrent requests in Node.js?"
- Asking AI to identify issues in your code or reasoning, e.g., "What logic errors might exist in my form validation?" or "Why is my API returning 404 here?"

Using GenAI in the ways listed above is strongly encouraged. It can act as a study partner that is always available to discuss ideas and help you check your understanding. However, do not cross the line into submitting AI-generated solutions, which counts as unauthorized aid in this course.

- Allowed:** Asking AI to analyze your code and describe possible problems, e.g., "Why is my login request failing?" or "What might be wrong in my React component state updates?"
- Not allowed:** Copying AI-generated code or applying its suggested fix verbatim into your submission, even if lightly edited, e.g., asking "Fix this for me" and copy-pasting the corrected code into your submission.

All work you submit must be written, typed, and validated by you (or your group members). The following are prohibited:

- Submitting any code or text produced by GenAI, including comments or documentation.
- Copying AI output into your assignment, even in modified or rewritten form.
- Using AI to complete assignment tasks on your behalf.

Use AI to understand the problem. Do your own work to produce the solution you submit. When using AI, treat it like a peer and ask yourself: "Is this giving me something to copy, or helping me understand what is wrong?"

The course policy towards AI usage is stricter than some others, because this is a formative course where the focus is on learning the fundamentals of web programming. Over-reliance on AI will not help you learn the basics. Tests in this course are closed-book, so success requires individual mastery over core concepts, syntax, debugging, and the development workflow.

Looking ahead, consider this: if an employer can get the same result from an AI tool as from you, why would they hire you? This course is designed to help you build skills that go beyond what automated tools can generate. The tutorials and assignments are structured to support that growth.

If you get stuck or have questions, come to office hours. We are happy to help.

### 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 \(https://studentlife.utoronto.ca/department/accessibility-services\)](https://studentlife.utoronto.ca/department/accessibility-services), as soon as possible via email ([accessibility.services@utoronto.ca \(mailto:accessibility.services@utoronto.ca\)](mailto:accessibility.services@utoronto.ca)) or phone ([416-978-8060 \(tel:416-978-8060\)](tel:416-978-8060)).