



<b>Course Name:</b>	Principles of Web Development COMP 307 – Winter 2026
<b>Instructor:</b>	Joseph Vybihal Office: ENGMC 327 Website: <a href="http://www.cs.mcgill.ca/~jvybihal">www.cs.mcgill.ca/~jvybihal</a> Course notes: <b>TBD</b> Discussion board: uAsk Email: <a href="mailto:joseph.vybihal@mcgill.ca">joseph.vybihal@mcgill.ca</a> Office hours: <b>TBD</b>
<b>Credits:</b>	3 credits
<b>Prerequisite:</b>	COMP-206
<b>Co-Requisite:</b>	COMP-303
<b>Motivation:</b>	Developing the front and back ends of websites, together with understanding the various paradigms, theories, and current technologies involved in web development, is an essential and relevant skill for students graduating from computer science and planning to work as web developers.
<b>Course Objectives:</b>	<p>Students wanting to work as website developers will need to understand the concepts behind server-side execution, client-side execution, security, language paradigms, distributed processing, interpreters, deployment methods, web frameworks, the architecture of the Internet, and some of the latest techniques and technologies. This would include standard practices and common programming languages.</p> <p><b>Primary learning outcomes:</b> To get a clear understanding of the major principles &amp; algorithms that underlie web development and receive practical hands-on experience through a project.</p> <p><b>Secondary learning outcomes:</b> After taking this course, the student should be able to: (1) identify the core technologies in web development and how they are architect-ed, (2) explain the paradigms and principles on which the core functions are built on, (3) be able to discuss major performance issues (data storage and run-time load), and (4) discuss the web technologies and techniques required for a particular target application.</p>
<b>Course Description:</b>	The course discusses the major principles, algorithms, languages, and technologies that underlie web development. Students receive practical hands-on experience through a project.
<b>Free Resources:</b>	<a href="#">W3Schools</a> & <a href="#">TutorialsPoint</a>
<b>Paid Text:</b>	Web Development: Full Stack, Ed 1, 2024, F. Max Coller <a href="https://sampling.vitalsource.com/referral?term=9798214415031">https://sampling.vitalsource.com/referral?term=9798214415031</a> Print ISBN: 9780357673850, eText ISBN: 9798214415031
<b>Teaching Method:</b>	This course is designed to provide students with both a practical and theoretical understanding of web development. The course is divided into three learning zones: <b>traditional</b> lectures, <b>primers</b> , and <b>tutorials</b> . Tutorials are optional and offered to practice techniques. Primers are required for students new to web programming. Primers are taught as hands-on labs by the professor during class time. A primer is not a lecture. Students do not need to attend a primer if they feel they know this material. Each primer is designated as a beginner- or intermediate-level lab. Traditional lectures are required for all students. These lectures combine PowerPoint and Whiteboard teaching of fundamental and advanced concepts. See the course outline for the schedule.

- 3 Assignments . . . . . 15% (each 5%)
- Project . . . . . 50% (end of exam)
- Late Midterm Exam. . . . . 35% (in-person)

Late work: You will be notified in advance of assignment due dates. All assignments are due on myCourses at the specified date and time. Late assignments will lose **10%** of their grade for each day they are late. Assignments beyond **2 days** late will not be accepted. You may not submit assignments via e-mail without the permission of the instructor.

Additional Work: Students with grades of D, F, or J will **not** be allowed to complete extra work to upgrade their grade.

Supplemental Exam: There will be **no** supplemental exam for this course.

Re-grading: Mistakes can occur when grading. Not surprisingly, requests for re-grading always involve those mistakes in which the student received fewer points than they deserved, rather than more points than they deserved. With that in mind, if you wish me to re-grade a question on an exam or assignment, I will do so. I reserve the right to re-grade other questions as well. **All regrading requests must happen within 7 days after the submission was graded.**

Cheating/Collaboration: Collaboration is encouraged, but your discussions should be public in the sense that anyone, including the professor, should be allowed to listen in, and no code is shared (including through conversation). Assignments are original works created by the student alone. You are permitted and encouraged to have conversations with other students concerning the meaning of the assignments, but your work must be original. If two or more assignments are found to be identical (or portions of assignments) then all parties will lose points. This includes the student who permitted their assignment to be copied. This includes written solutions and software source code. **ChatGPT is an example of cheating.**

Grading: All software solutions must compile with zero errors and must run to be graded. It does not need to run correctly for grading, but it must run. If your program compiles with errors or does not run at all, then you will receive zero points. The grader will not fix your code or review the source code to award partial grades.

**Communication**

My Courses: All official communication, including announcements, lecture material, assignments, and grades, will be found on My Courses.

Course Discussions: uAsk

Private Email: The professor and TA have private email accounts that you may also use; however, these channels are for personal queries only. For example, if you have a problem with your grade, then email the TA who graded you directly, do not email the prof, and do not use the course email address.

Appointments: Please email the person you want to communicate with directly to book an appointment outside office hours.

Office Hours: Consult the posted office hours and come at those times without an appointment.

After the lecture, some optional time will be available just after class to ask questions. I do not guarantee the duration of this time, as other constraints may interfere.

**TA**

**The complete details about your TA can be found on myCourses: TA/Prof Coordinates.**

Tentative Course Schedule					
LECTURE				HOMEWORK	
Date	Class			Assignment	Tutorial
<b>Unit 1 – The Internet Landscape – Networks</b>					
Jan 6	Course introduction. Internet history. What’s trending? Front-end vs Back-end design. Development stacks: XAMPP, MEAN, Backend Languages & the MACH Architecture.				
Jan 8	The Internet is an unsupervised network. Network parts. Packets. Why ASCII. Importance of encryption. About Client-server vs peer-to-peer communication, and the basic REST protocol.				
<b>PRIMER</b> Tuesday - Optional		<b>LECTURE</b> Thursday - Required		<b>HOMEWORK</b>	
Date	Class	Date	Class	Assignment	Tutorial
<b>Unit 2 – Frontend Design</b>					
Jan 13	Beginner – HTML 5 & FORMS	Jan 15	Planning a website: engineering & design		Tut A Wireshark
Jan 20	Beginner – CSS & DIV	Jan 22	Design Systems	A1 Protocols, Plan & Design	Tut B Planning
Jan 27	Beginner – JS programming	Jan 29	Responsive design		Tut C Bootstrap
Feb 3	Intermediate – HTML+CSS+JS+ Canvas & SVG	Feb 5	Interactive content	A2 Responsive & Interactive	Tut D YouTube Guy
Feb 10	Beginner – Browser inspect, SEO, CMS	Feb 12	About Frameworks		Tut E YouTube Girl
<b>Unit 3 – Backend Design</b>					
Feb 17	SOCS Server: Apache, webpages, APIs, and languages.	Feb 19	About web servers & Network Protocols: connection and HTTP.		
Feb 24	Beginner – XAMPP & PHP with C.	Feb 26	MACH architecture & Dynamic content	A3 XAMPP App & Google API	
<b>Mar 2 to Mar 6</b>	<b>STUDY BREAK</b>				
Mar 10	Beginner - SQL & Mongo	Mar 12	3-tier web applications & API-only websites & Content Generation.		Tut F SQL & Mongo
Mar 17	Beginner – Node.js with Forms	Mar 19	Building a website example	<b>Project</b>	
Mar 24	Beginner – React	Mar 26	Ethics, standards, and regulations (if time)		Tut G MERN
LECTURE				HOMEWORK	
Date	Class			Assignment	Tutorial
<b>Unit 4 – Security</b>					
Mar 31	Security issues: <b>Man-in-the-middle, Denial-of-service</b> . Privacy - Absence, Adwords, MMap. Example: SOCS file security. Browser cache and cookie security issues.				Tut H Cache & Cookies

April 2	<b>Midterm</b>		
April 7	Obfuscation using <b>routing</b> (DIY, Slim framework, NodeJS) and <b>Secrets</b> (encryption and hashing passwords, 1-key vs public-key).		
April 9	Practical security: How do we know when someone has logged in? JSON Web Tokens. Login/logout database (user & session data). Tickets (page/object access rights).		
April 14	<b>NO CLASS</b>		
End of Exam Period	Final project code due as a ZIP file		
	Final presentation & demo video due with PPT file		
	Link to operational website		

## General Course Information

### Right to submit in English or French written work that is to be graded

In accordance with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

**Classroom Rules:** All electronic devices (cell phones and beepers) must be turned off or left on silent mode during class time.

**Assignments Pickup:** All assignments are submitted to and picked up in My Courses.

**Computing Resources:** Trotter 3<sup>rd</sup> floor.

### Examinations and Grading:

Students are responsible for all materials for the tests and exams, whether they are covered in class. Exams will include questions from all sources and types, and students may be required to integrate theoretical concepts from the text to substantiate their arguments.

**No make-up tests or make-up assignments are allowed in this course.**

If you are not satisfied with the grading of an assignment or mid-term test, you may request a review **within 7 days of return**. Indicate in writing or during a meeting with the instructor where and why you feel the marks are unjustified, and give it back to your instructor for re-grading. Note that the entire assignment or mid-term test will be regraded, and your grade can go up or down (or stay the same) accordingly.

#### *Calculators*

Only non-programmable, no-tape, noiseless calculators are permitted. Calculators capable of storing text are not allowed in tests and examinations.

#### *Dictionaries*

Dictionaries are not permitted, but translation dictionaries are.

#### *Handheld Devices*

Handheld devices capable of storing text and having calculator functionality (e.g. Palm, etc.) are not permitted.

**Additional Information:** The course slides are not intended as a complete set of notes or a substitute for a textbook, but rather as the focus of the lecture. Significant gaps remain on the slides that are filled in during class; thus, lecture attendance should be considered essential.

The material covered in class will supplement the textbook readings.

**Academic Integrity:***Code of Student Conduct*

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism, and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see <https://www.mcgill.ca/deanofstudents/student-rights-and-conduct/code-student-conduct-and-disciplinary-procedures> for more information).

*L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site <https://www.mcgill.ca/deanofstudents/student-rights-and-conduct/code-student-conduct-and-disciplinary-procedures>).*

**Final Exam Policy:***Regulations*

Students should not make other commitments during the final exam period. Vacation plans do not constitute valid grounds for the deferral or rescheduling of examinations. See the Centre Calendar for the regulations governing Examinations:

<https://www.mcgill.ca/exams/regulations>

Students are required to present their I.D. Card (with photo) for entrance to their examination.

*Conflicts*

If you are unable to write your final examination due to scheduling conflicts, you must submit a Final Exam Conflict Form with supporting documentation at least **one month** before the start of the final examination period. Late submissions will not be accepted. For details, see

<https://www.mcgill.ca/exams/dates/conflicts>

*Exam Timetable*

Examination schedules are posted at the Centre and on the following page approximately 6-8 weeks before the examination period commences

<https://www.mcgill.ca/exams/dates>

The Centre cannot provide examination dates over the telephone.

**Email Policy:**

E-mail is one of the official means of communication between McGill University and its students. As with all official University communications, it is the student's responsibility to ensure that time-critical e-mail is accessed, read, and acted upon in a timely fashion. If a student chooses to forward University e-mail to another e-mail mailbox, it is that student's responsibility to ensure that the alternate account is viable.

*Please note that to protect the privacy of the students, the University will only reply to the students on their McGill e-mail account.*

**Students' Rights and Responsibilities:**

Regulations and policies governing students at McGill University can be downloaded from the website:

<https://www.mcgill.ca/students/srr/>

**Student Services and Resources:**

Various services and resources, such as email access, walk safe, library access, etc., are available to students:

<https://www.mcgill.ca/student-services/>

**Minerva for Students:**

<http://www.mcgill.ca/minerva-students/>

**Important Note:**

In the event of extraordinary circumstances beyond the University's control, the evaluation scheme for a Course may be changed, provided that the students are notified in a timely manner.

**Land acknowledgement:**

McGill University is on land which has long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. We acknowledge and thank the diverse Indigenous people whose footsteps have marked this territory on which people of the world now gather. Please see here for more details: <https://www.mcgill.ca/edu4all/other-equity-resources/traditional-territories> .