



# COMP 2406 A Fall 2022

## COMP 2406 Fundamental of Web Applications

### COURSE OUTLINE

Lectures	Mon,Wed 10:00-11:30 Synchronously ONLINE (only the quizzes will be synchronous)
Tutorials	<p>(A1) Thu 2:30-4:00 Nicol Building room 4020            (A2) Thu 4:00-5:30 Tory Building room 340            (A3) Fri 8:30-10:00 Tory Building room 208</p> <p>(You MUST attend the session you are registered in)</p> <p>Tutorial grading: tutorials are marked out of 2 marks as follows:            0 marks for no show or no significant progress.            1 mark for partial progress (typically half the exercises).            2 marks for completing or almost completing the exercises.</p> <p>Important: tutorials are meant to be started as homework. You will generally not be able to finish if you only start when you come to the tutorial session.</p>
Instructor	Louis Nel ( <a href="http://www.scs.carleton.ca/~ldnel">http://www.scs.carleton.ca/~ldnel</a> )
TA/Lab Co-ordinator	Sean Benjamin <a href="mailto:SeanBenjamin@cunet.carleton.ca">SeanBenjamin@cunet.carleton.ca</a> ( <a href="mailto:SeanBenjamin@cunet.carleton.ca">mailto:SeanBenjamin@cunet.carleton.ca</a> )

### Calendar Description:

Fundamentals Web Applications Course Description: Introduction to Internet application development; emphasis on computer science fundamentals of technologies underlying web applications. Topics include: scripting and functional languages, language-based virtual machines, database query languages, remote procedure calls over the Internet, and performance and security concerns in modern distributed applications.

Precludes additional credit for SYSC 4504. Prerequisite(s): (COMP 1006 or COMP 1406 or SYSC 2004) with a minimum grade of C-.

### Course Description:

The course covers the principles involved in the design and implementation of web-based applications. Our primary programming language will be Javascript (on both client and server side). The course will examine programming concepts as they relate to building web applications and will emphasize the computer science fundamentals. Our aim is for the course to be as OS agnostic as possible so that you can choose your OS: Windows, Mac OS, or linux. The technologies in this course are intended to work on all those platforms though slight variations may occur.

## Topics:

The follow are the topics we covered in previous offerings and will be adjusted and updated as the course proceeds.

- Web Concepts, HTTP, HTTPS
- Javascript
- Client and Server side coding (in javascript)
- Markup Languages (HTML, CSS, XML, Bootstrap)
- Javascript execution environments: Browser, Node.js and Express.js framework
- Javascript evolution (ES5, ES6) and modularization features (require vs. import)
- Node.js and its NPM echo-system
- Client-Sever data exchange with JSON and XML
- Functional Programming and Closures
- Synchronous vs Asynchronous function calls.
- JSON and Relational databases (using MongoDB and SQLite)
- RESTful Web API's
- Server Side templating (using Handlebars, PUG, etc.)
- Session Storage and Cookies, AJAX, Web Sockets.

## Lectures and Textbook:

**IMPORTANT:** Regardless of any COVID-19 restrictions, this course will be a blended course with lecture content being delivered asynchronously by posted videos and powerpoints. The official class time will be used to hold quizzes synchronously -test to be done at a scheduled time for a prescribed duration. There will also be live (in person) tutorials and synchronous office hours and question and answer sessions using a Discord server.

There will be three online platforms involved in this course: the course content website, the brightspace account where you will hand in assignments and do quizzes and the Discord server where we will host some office hours and forum questions. Office hours will be a combination of live and online.

This course will be taught from many sources and much of the content is available freely online. Some recommended texts will be provided in the resources section of the course website. The resources section will be updated as the course proceeds and students are encouraged to contribute to the list.

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For this offering lectures will be video taped and posted online on YouTube.

## Course Material Copyright Notice:

We remind you that lectures and course materials, including power point presentations, outlines, code examples, and similar materials, are protected by copyright. The professor is typically the exclusive owner of copyright and intellectual property of the course materials unless otherwise noted. You may take notes and make copies of course materials for your own private (educational) use. You may not (and may not allow others to) reproduce or distribute lecture notes and course materials publicly for commercial purposes without my express written consent.

This notice has been added, in part, because course content has ended up on public sites like OneClass, Course Hero, or GitHub without permission. Many students are eager to post their work on GitHub but you must be careful not to include copyrighted material.

## Software:

We will attempt to keep the course as OS agnostic as possible. The primary programming language we will use is Javascript. On the server side javascript will be executed in the Node.js environment and use the Express.js framework for some of the later assignments. Node.js runs on Windows, Linux or Mac OS. On the client side javascript will be executed in the browsers (Chrome, Firefox, Edge, Safari). Chrome will be our "official" course browser. In this course you will be free to work on whichever OS you prefer. The computers in our undergrad labs (HP4155) are running Windows but those labs will NOT be used for the tutorials. You will need to use your own laptop for the tutorials since they will be in rooms not equipped with computers.

The assignments and tutorials all involve programming.

## Tutorials:

This class has compulsory tutorials that you must attend once a week in person. The tutorials are an important part of the course and make up a substantial portion of the marks. The tutorial exercises will be posted ahead of time and you are expected to work on them before you come to the tutorial. At the tutorial you will demonstrate your results to the supervising TA's and may be asked to make minor modifications to demonstrate your understanding.

## Assignments:

We will be using electronic submission of assignments using Carleton's brightspace (<https://brightspace.carleton.ca>) system. Electronic submission enforces strict deadlines. Only assignments submitted through brightspace will be graded. No assignments will be accepted late or directly by email or in other forms. TA's are not allowed to accept assignments directly.

## Lab/TA Co-ordinator:

We have a lab/TA co-ordinator assigned to this course offering.

The lab coordinator is responsible for organizing and overseeing the tutorial sections of the course and also imposing submission rules to help ensure that marking goes smoothly. If you notice any mistakes within a tutorial, have issues with a tutorial teaching assistant, or have any other tutorial related questions, the lab coordinator should be your first point of contact. The lab coordinator is also responsible for distributing assignments to teaching assistants for marking. If you are missing an assignment grade or are unsure about the status of your assignment, you can contact the lab coordinator.

### Undergraduate Academic Advisor

The Undergraduate Advisor for the School of Computer Science is available in Room 5302C HP; or by email at [scs.ug.advisor@cunet.carleton.ca](mailto:scs.ug.advisor@cunet.carleton.ca) (<mailto:scs.ug.advisor@cunet.carleton.ca>). The undergraduate advisors can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisors will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and Writing Tutorial Services.

### SCS Computer Laboratory

SCS students can access one of the designated labs for your course. The lab schedule can be found at: <https://carleton.ca/scs/tech-support/computer-laboratories/> (<https://carleton.ca/scs/tech-support/computer-laboratories/>). All SCS computer lab and technical support information can be found at: <https://carleton.ca/scs/technical-support/> (<https://carleton.ca/scs/technical-support/>). Technical support is available in room HP5161 Monday to Friday from 9:00 until 17:00 or by emailing [SCS.Tech.Support@cunet.carleton.ca](mailto:SCS.Tech.Support@cunet.carleton.ca) (<mailto:SCS.Tech.Support@cunet.carleton.ca>).

## Teaching Assistants:

A schedule for TAs will be posted in the course brightspace account.

## Marking Scheme:

deliverable	value	comment
Tutorials	25%	10 tutorials. Count best 8/10 (completed individually)
Assignments	35%	4 assignments equally weighted individual assignments Count BEST 3/4 assignments.
Quizzes	25%	There will be 5 quizzes - one every other week. There is no final exam. The quizzes will be accessed synchronously in brightspace during the office class time on Wednesdays. (count best 4/5 tests)
Final Term Project	15%	Final assignment is a term projects which you will code and demonstrate by producing a YouTube video.
Final Exam	0%	THERE IS NO FINAL EXAM IN THE COURSE

Missed assignments: You may miss up to 2 tutorials, 1 assignment and 1 quiz for medical, compassionate, or other reasons without penalty. If you miss more than that a mark of 0 will be used for the missed items when the final grade is computed. We will NOT collect doctor's notes for missed work; if you miss more than the allowed number a mark of 0 will be used for the missed work.

**IMPORTANT:** If you wish to appeal a mark (assignment, tutorial or midterm) you must make the appeal within 10 days of the mark being posted on brightspace. After that we will not be obliged to accept appeals or change marks.

Collaboration is encouraged but cheating, or copying, is not allowed. You may work together and consult but any work you hand in must be your own and judged to be unique. Any two assignments judged to be too similar will both receive a grade of 0, and will be handled as a formal academic offence -see calendar for details.

## Course Web Page:

As well as being announced in class, all important information, such as course news, assignments, TA hours, instructor office hours, will be available on the course web page at <http://www.scs.carleton.ca/~ldnel/2406fall2022> (<http://www.scs.carleton.ca/~ldnel/2406fall2022>). It is your responsibility to check this web page frequently for new information and announcements. Paper copies of outlines and assignments will not be provided. I will likely send a weekly mass emails to everyone summarizing the tasks and deliverables for the week.

## IMPORTANT UNIVERSITY POLICIES

For information about Carleton's academic year, including registration and withdrawal dates, see Carleton's Academic Calendar (<https://calendar.carleton.ca/academicyear/>).

**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 Equity Services (<https://carleton.ca/womensstudies/resources-and-links/equity-services/>).

**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 <https://carleton.ca/equity/focus/discrimination-harassment/religious-spiritual-observances/> (<https://carleton.ca/equity/focus/discrimination-harassment/religious-spiritual-observances/>).

**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](mailto:pmc@carleton.ca) (<mailto: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. For more details, visit the Paul Menton Centre website (<http://carleton.ca/pmc>).

**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 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](http://carleton.ca/sexual-violence-support) (<http://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. For more details, see the policy (<https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>).

**Student Academic Integrity Policy.** Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of *F* in the course or even being expelled from the program or University. Examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found here (<https://carleton.ca/registrar/academic-integrity/>).

**Plagiarism.** As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science. Standard penalty guidelines can be found here (<https://science.carleton.ca/academic-integrity/>).

**Unauthorized Co-operation or Collaboration.** Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis". Please refer to the course outline statement or the instructor concerning this issue.

### Special Information

It is important to remember that COVID is still present in Ottawa. The situation can change at any time and the risks of new variants and outbreaks are very real. There are number of actions you can take to lower your risk and

the risk you pose to those around you including being vaccinated, wearing a mask, staying home when you're sick, washing your hands and maintaining proper respiratory and cough etiquette.

**Feeling sick?** Remaining vigilant and not attending work or school when sick or with symptoms is critically important. If you feel ill or exhibit COVID-19 symptoms do not come to class or campus. If you feel ill or exhibit symptoms while on campus or in class, please leave campus immediately. In all situations, you must follow Carleton's symptom reporting protocols.

**Masks:** Carleton has paused the COVID-19 Mask policy, but continues to strongly recommend masking when indoors, particularly if physical distancing cannot be maintained. It may become necessary to quickly reinstate the mask requirement if pandemic circumstances were to change.

**Vaccines:** While proof of vaccination is no longer required as of May 1 to attend campus or in-person activity, it may become necessary for the University to bring back proof of vaccination requirements on short notice if the situation and public health advice changes. Students are strongly encouraged to get a full course of vaccination, including booster doses as soon as they are eligible, and submit their booster dose information in cuScreen as soon as possible. Please note that Carleton cannot guarantee that it will be able to offer virtual or hybrid learning options for those who are unable to attend the campus.

All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent information about Carleton's COVID-19 website and review the Frequently Asked Questions (FAQs). Should you have additional questions after reviewing, please contact [covidinfo@carleton.ca](mailto:covidinfo@carleton.ca) (mailto:covidinfo@carleton.ca).

**Doctor's note or medical certificate:** in effect for Fall 2022 term. In place of a doctor's note or medical certificate, students are advised to complete the self-declaration form (<https://carleton.ca/registrar/wp-content/uploads/self-declaration.pdf>) available on the Registrar's Office website to request academic accommodation for missed course work including exams and assignments. Students should also discuss with the course instructor the required accommodations arising from the COVID-19 situation.