COMP2406 - Fundamentals of Web Applications

Winter 2017

Description

The course covers the principles involved in the design and implementation of web applications. Our primary programming language in this offering 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.

Topics Covered

Here is a list of the main topics covered:

- Web Concepts, HTTP
- Markup Languages (HTML, CSS)
- Javascript
- Client and Server side coding (in javascript)
- Javascript execution environments: Browser, Node.js, and Express.js
- Node.js and NPM
- Functional Programming and Closures
- Synchronous and Asynchronous programming
- JSON databases (using MongoDB)
- Server side templating (using Pug)
- Sessions, Cookies, Ajax, and Web Sockets

Course Objectives

This course will teach you the fundamentals of web development. The course covers a substantial number of languages and technologies requiring students to learn not only the web concepts at hand, but also the higher level learning and development principles. By the end of this course, you should be able to write web sites, web servers, and end-to-end web applications, as well as have a general familiarity with the core underlying technologies. The course will require students to learn the underlying principles in order to quickly and easily digest and interpret the syntax of the many technologies employed, through their associated Application Programming Interfaces (APIs).

Textbook

This course will be taught from many sources and much of the content is available freely on the internet. Some recommended texts are available on the main course page. Resources will be added to this page as the course proceeds.

Software
The main programming language for this course is Javascript. This will be run via the Node.js frameworks, as well as through web browsers (Firefox, Chrome, IE/Edge, Safari). You can find links to required software on the main course page. Resources will be added to this page as the course proceeds.

**Evaluation**

Students will be evaluated in this course according to the following measures:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorials (x10)</td>
<td>10% (1% each)</td>
</tr>
<tr>
<td>Assignments (x4)</td>
<td>32% (8% each)</td>
</tr>
<tr>
<td>Mid-term exam</td>
<td>18%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40%</td>
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**Assignments**

- There will be 4 assignments in this course.
- All assignments will be made available on the course web page as they are released.
- All assignments should be completed on an individual basis (no working in pairs or groups).
- All assignments are counted towards the final grade.

**Submission Guidelines:**

- You will be using Carleton's cuLearn system to submit your assignments and view your grades throughout the term.
- You should take the time to ensure that assignments are neat, legible and easy to understand. A portion of your grade for assignments will be given for the readability of them and for your demonstration that you have completed the assigned tasks. Often this is in the form of documentation and testing.
- The assignment page is likely to have a section on submission guidelines. Please observe all special requirements placed there as well.
- Remember, it is YOUR responsibility to demonstrate that you have understood and completed the assignment.
- Any instructions required by the teaching assistants (for example any assumptions you made about the assignment) should be clearly indicated on a separate README.TXT file, included with the assignment.
- DO NOT email your assignments to any TAs unless requested to do so.

**Grading:**

- All assignments submitted through cuLearn will be graded by the TAs or the Instructor.
- Grading turn-around is expected to be within one week of the submission deadline, though this may vary depending on the volume and complexity of assignments.
- You will be provided with a mark and feedback on your assignment through cuLearn as well.
You should ensure that the posted marks are correct.

Any concerns regarding assignment marks should be brought to the attention of the person who marked it, not the instructor. Contact emails are available via the Schedule page.

If the TA is unable to reasonably assess your concerns either they or you may contact the instructor to arbitrate the discussion.

Voicing your concerns must be done no later than two weeks after the assignment has been returned to you. After this time, no remarking will be done.

- Late Policy:
  - Assignments must be handed in before or on the due date and time.
  - You will be given a sufficient amount of time to complete each assignment.
  - Any assignments submitted after the deadline will be marked with a late penalty.
  - If an assignment indicates that no lates will be accepted then the late penalty will be 100% immediately following the deadline.
  - The standard late penalty is 25% per day. (E.g., your assignment is 30 minutes late, it is -25%, 24 hours and 1 minute late, it is -50%).
  - Any changes made to an assignment submission after the deadline (even minor or insubstantial ones) will result in the entire submission being considered late.

- Recommendations:
  - Do not wait until the last minute to submit your assignments.
  - Start early and keep submitting partially completed versions. That way, if you get sick, your partially completed version will be marked, and you will not get 0. Being sick on the day an assignment is due is not an excuse for not doing it. Last minute issues such as a home internet or device failure are not considered acceptable excuses.
  - Always keep a backup of your work, perhaps on a USB flash drive, via Dropbox, or by sending yourself an email with your assignment attached. That way you can access your code from anywhere.
  - If you are sick for an extended period of time, please inform the instructor (not the TAs). You will need to have official documentation of illness. Such situations will be handled on a case-by-case basis.
  - If any instructions are unclear, please ask for clarification. Incorrect assumptions or misunderstood directions will not be accepted as valid excuses. It is your responsibility to ensure you understand the question completely.

**Tutorials**

Attendance and completion of tutorials for this course are mandatory. It is strongly recommended that you attend and attempt each tutorial. Completed tutorials must be demonstrated to the TA during your scheduled tutorial in order to receive credit for each tutorial. The tutorial tasks will be provided on the course website. The topics covered in a given tutorial may span those taught in lecture for the same week, and will benefit your requisite understanding for the assignments and tests.

**Midterm**
The midterm will be closed-book and will cover material discussed up to the lecture prior to the midterm. The midterm will be held during regularly scheduled lecture. The date of the midterm will be announced on the main course page later in the term. Your test must be handed back immediately when completed in order to be graded. You must attend and write the midterm. If sick, you must inform the instructor via email by the day before at the latest, and you will need official documentation as well. Exceptions are only granted at the discretion of the instructor.

**Final Exam**

The time and place, as well as the format of the final exam will be announced later in the term. Do not make travel plans until the dates are known as no advance exams will be given. The exam period can be found at [http://carleton.ca/registrar/registration/dates-and-deadlines/](http://carleton.ca/registrar/registration/dates-and-deadlines/). Attendance of this exam is mandatory.

**Collaboration Policy**

Collaborating on assignments is strictly disallowed. You must complete the work by yourself. If you need help, please see a TA or your instructor. Posting assignment solutions on discussion boards before the due date and time is also prohibited.

**SCS Computer Accounts**

Any student taking an SCS course qualifies to have an SCS account. SCS accounts can be created at the following URL: [http://www.scs.carleton.ca/newacct](http://www.scs.carleton.ca/newacct). SCS students can access one of the designated labs for your course. The labs are operational 7 days a week 24 hours per day, please be advised that the building will be closed overnight, Mon. - Fri. 23:00 - 8:00 and on weekends from 17:00 - 8:00. Technical support is available in room HP5161 Monday to Friday from 9:00 until 17:00. All SCS account related information is accessible at the following URL: [http://www.scs.carleton.ca/nethelp](http://www.scs.carleton.ca/nethelp).

**Undergraduate Academic Advisor**

The Undergraduate Advisor for the School of Computer Science is available in Room 5302C HP, by telephone at 520-2600, ext. 4364 or by email at undergraduate_advisor@scs.carleton.ca. The undergraduate advisor can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisor will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and the Writing Tutorial Services.

**University Policies**

**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. Some examples of offences are: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found in the Undergraduate Calendar.

**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.

**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.

**Students with Disabilities Requiring Academic Accommodations**

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

**Religious Obligation**

Write to me concerning 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 the Equity Services website http://www.carleton.ca/equity/accommodation

**Pregnancy Obligation**

Write to me concerning 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 the Equity Services website http://www.carleton.ca/equity/accommodation

**Medical Certificate**
The following is a link to the official medical certificate accepted by Carleton University for the deferral of final examinations or assignments in undergraduate courses. To access the form, please go to http://www.carleton.ca/registrar/forms