THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-3909-050
Course Name: Advanced Internet Programming
Course Webpage: https://nexus.uwinnipeg.ca/d2l/home/48031

Instructor Information

Instructor: Michael Beck
E-mail: m.beck@uwinnipeg.ca

Office Hours:	Thursday	13:00-14:00	TBA
Class meeting time:	Thursday	18:00-21:00	3C13

Important Dates

1.	First Class:		Thursday, September 8, 2022
2.	Reading Week (no classes):		October 9-15, 2022
3.	Midterm Presentation:		Thursday, November 3, 2022
4.	Final Withdrawal Date w/o academic penalty*:		Wednesday, November 16, 2022
5.	Last Class:		Thursday, December 1, 2022
6.	Final Exam (Comprehensive):		TBD
7.	University closures:	Truth and Reconciliation Day	Friday, September 30, 2022
		Thanksgiving	Monday, October 10, 2022
		Remembrance Day	Friday, November 11, 2022

*A minimum of 20% of the work on which the final grade is based will be evaluated and available to the student before the voluntary withdrawal date.

Course Objectives / Learning Outcomes

This course provides students with a thorough knowledge of server-side web programming. The students will learn to use different light- and heavy-weight frameworks. Focus is directed towards the development of single-page-applications (SPA), persistence, security, and mobile applications.

Note: A permitted or necessary change in mode of delivery may require adjustments to important aspects of course outlines, like class schedule and the number, nature, and weighting of assignments and/or exams.

Evaluation Criteria

1) Assignments (24%)
   a) 4 assignments worth 8% each
   b) Individual due dates will be posted on Nexus
   c) No late submissions will be accepted
   d) Students are responsible for backing up and protecting their lab and project work.
2) Midterm Presentation (26%)
   a) During regular class time (see Important Dates)
   b) Consists of
      i) Submitting code upfront
      ii) Presentation
      iii) Code review
   c) Total duration per group: appr. 20 minutes, depending on class size
   d) Students will present a milestone of their application that they continuously worked on during the semester.
   e) Code review consists of questions asked about the code the students have written and how changes in functionality would be implemented.
3) Final Exam (50%)
   a) Date to be announced
   b) Consists of
      i) Submitting code upfront
      ii) Presentation
      iii) Code review
   c) Total duration per group: appr. 20 minutes, depending on class size
   d) Students will present their finalized application that they continuously worked on during the semester.
   e) Code review consists of questions asked about the code the students have written and how changes in functionality would be implemented.

Assignment and project submissions:
All work is to be submitted electronically via Nexus. All coding is to be submitted in the format indicated on the assignment sheets (usually .js). Any non-coding written work is to be submitted in PDF format. Further details and submission procedure will be stated in each assignment.

Students should contact the instructor as soon as possible if extenuating circumstances require missing a presentation, assignment, test, or examination. A medical certificate from a practicing physician may be required before any adjustments are considered.

Midterm / Exam Requirements

- Photo ID is required for the final exam and midterm.
- Usage of computers, calculators, phones, or other electronic devices that go beyond demonstration of the students' code is not permitted during exams.
- Midterm and final exams are closed book.

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., note-takers) are encouraged to contact Accessibility Services (AS) at 204-786-9771 or accessibilityservices@uwinnipeg.ca to discuss appropriate options. All information about a student's disability or medical condition remains confidential.
https://www.uwinnipeg.ca/accessibility-services.

Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found in the 2022-23 Undergraduate Academic Calendar online at http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf

Required Textbook / Reading List

- Class Notes will be available on Nexus
- The course is loosely based on
    - Beginning Node.js by Basarat Ali Syed
    - Web Development with Node & Express by Ethan Brown
- Of more use will be the official online documentation of the frameworks used in this course:
    - Node: https://nodejs.org
    - Express: https://expressjs.com
    - MongoDB: https://www.mongodb.com
    - Handlebars: https://handlebarjs.com
    - Meteor: https://www.meteor.com
    - React: https://reactjs.org
- **It is recommended to have the latest LTS version of node.js installed for the first lecture**, see: https://nodejs.org/en/download/
- IDE: There are many good IDEs for JavaScript. The lecturer will use WebStorm. Using the same IDE is not required by the student. **It is recommended that students have an IDE of their choice for writing JavaScript installed for the first lecture.**

Final Letter Grade Assignment

Historically, numerical percentages have been converted to letter grades using the following scale. However, instructors can deviate from these values based on pedagogical nuances of a particular class, and final grades are subject to approval by the Department Review Committee.

A+	90 – 100%	B+	75 – 79%	C	60 – 64%
A	85 – 89 %	B	70 – 74%	D	50 – 59%
A-	80 – 84%	C+	65 – 69%	F	below 50%

Topics to be covered (tentative)

1. Introduction:
    a. Web Server Architectures
    b. JavaScript, Callbacks, Promises, Async/Await
2. Node.js
    a. Philosophy of Node and Hello World Server
    b. Serving static files and directories
3. Express.js
    a. Hello World Server and routing
    b. Middleware
    c. Accepting input
    d. Forms, Download/Upload
    e. Towards single page applications (SPA)
4. Persistence with MongoDB
    a. Setup and Documents
    b. Create, Read, Update, Delete (CRUD)
    c. Schemas and Mongoose
5. Templating with Handlebars
    a. Syntax
    b. Partials and helpers
6. Code organisation
7. Security
    a. Cross-site scripting attacks
    b. Cross-site request forgery
    c. Cookies and creating state
    d. Sessions
    e. Authentication and HTTPS
8. Meteor.js and React.js
    a. Differences to Express.js
    b. Hello World Server and Components
    c. Persistence
    d. Forms and Events
    e. Authentication
    f. Methods
    g. Publications

Prerequisite Information

This information can be found in the UW General calendar:
ACS-1904 Programming Fundamentals II, ACS-2909 Internet Programming, ACS-2814 (or the former ACS-2914) Application of Database Systems with a minimum grade of C.

Class Cancellation, Correspondence with Students and Withdrawing from Course

When it is necessary to cancel a class due to exceptional circumstances, the course instructor will make every effort to inform students via uwinnipeg email and Nexus.

Students are reminded that they have a responsibility to regularly check their uwinnipeg e-mail addresses to ensure timely receipt of correspondence from the University and/or the course instructor**.**

When emailing the instructor, you are to use the UofW Webmail system, i.e. webmail.uwinnipeg.ca to communicate with the instructor. Do not use the Nexus email system, i.e., mail.nexus.uwinnipeg.ca, Nexus mailbox are not monitored on a regular basis.

Please let course instructor know if you plan on withdrawing from the course. Note that withdrawing before the VW date does not necessarily result in a fee refund.

Student Wellness

The University of Winnipeg affirms the importance of student mental health and our commitment to providing accessible, culturally appropriate, and effective services for students. Students who are seeking mental health supports are encouraged to reach out to the Wellness Centre at studentwellness@uwinnipeg.ca or 204.988.7611. For community-based mental health resources and supports, students are encouraged to dial 2-1-1. This program of United Way is available 24/7 in 150 languages.

Regulations, Policies, and Academic Integrity

Academic dishonesty is a very serious offense and will be dealt in accordance with the University's policies.

Avoiding Academic Misconduct: Students are encouraged to familiarize themselves with the Academic Regulations and Policies found in the University Academic Calendar at: https://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf
Particular attention should be given to subsections 8 (Student Discipline), 9 (Senate Appeals) and 10 (Grade Appeals). Please note, in particular, the subsection of Student Discipline pertaining to plagiarism and other forms of cheating.

Detailed information can be found at the following:

- Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf
- UW Library video tutorial "Avoiding Plagiarism" https://www.youtube.com/watch?v=UvFdxRU9a8g

Uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work)

involves “aiding and abetting” plagiarism. Students who do this can be charged with Academic Misconduct.

Non-academic misconduct. Students are expected to conduct themselves in a respectful manner on campus and in the learning environment irrespective of platform being used. Behaviour, communication, or acts that are inconsistent with a number of UW policies could be considered “non-academic” misconduct. More detailed information can be found here:

- Respectful Working and Learning Environment Policy https://www.uwinnipeg.ca/respect/respect-policy.html,
- Acceptable Use of Information Technology Policy https://www.uwinnipeg.ca/institutional-analysis/docs/policies/acceptable-use-of-information-technology-policy.pdf
- Non-Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-procedures.pdf.

Copyright and Intellectual Property. Course materials are the property of the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides—irrespective of format. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor/presenter before, for example, photographing, recording, or taking screenshots of slides, presentations, lectures, and notes on the board. Students found to be in violation of an instructor’s intellectual property rights could face serious consequences pursuant to the Academic Misconduct or Non-Academic Misconduct Policy; such consequences could possibly involve legal sanction under the Copyright Policy
https://copyright.uwinnipeg.ca/docs/copyright_policy_2017.pdf

Privacy

Students have rights in relation of the collecting of personal data the University of Winnipeg: https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html.