THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-3909-001
Course Name: Advanced Internet Programming
Course Webpage: https://nexus.uwinnipeg.ca/d2l/home/72597

Instructor Information

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

Office Hours:	Mondays	12:30 pm - 1:30 pm	3D23
Class meeting time:	Monday/Wednesday	4:00 pm – 5:15 pm	3D01

Important Dates

1. First Class:		Wednesday, September 3, 2025
2. Reading Week (no classes):		October 12-18, 2025
3. Midterm Test		By appointment (see below)
4. No lectures due to midterms		October 20 + October 22, 2025
5. Final Withdrawal Date w/o academic penalty*:		Wednesday, November 12, 2025
6. Last Class:		Monday, December 1, 2025
7. Final Exam (Comprehensive):		By appointment (see below)
8. University closures:	Truth and Reconciliation Day	Tuesday, September 30, 2025
	Thanksgiving	Monday, October 13, 2025
	Remembrance Day	Tuesday, November 11, 2025
9. Make-up classes/labs on holiday closures:		Wednesday, December 3, 2025

*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.

Evaluation Criteria

1) Assignments (20%)
   a) 4 assignments worth 5% each
   b) Individual due dates will be posted on Nexus
   c) No late submissions will be accepted
   d) Multiple submissions are permitted but only the last submission is considered official and will be marked. Students may submit partially completed assignments and will receive marks for those problems attempted.
2) Midterm code review (20%)
   a) Date by appointment in the week of October 20 (the week after reading week). Schedule for midterm slots will be presented in the lecture. Every student **must** book an appointment to have their midterm graded.
   b) Consists of
      i) Submitting code beforehand (deadline will be announced in lecture)
      ii) In person code review
      iii) Comprehensive oral exam of the course topics covered so far
   c) Total duration per student: appr. 20 minutes
   d) Each student will present a milestone of their application that they continuously worked on during the semester.
   e) Code review consists of questions about the code the student has written and how changes in functionality would be implemented.
3) Final Exam (60%)
   a) Date by appointment in the exam period. Schedule for final exam slots will be presented in the lecture/Nexus. Every student must book an appointment for final exams.
   b) Consists of
      i) Submitting code before the deadline
      ii) In person code review
      iii) Comprehensive oral exam of the course topics
   c) Total duration per student: appr. 40 minutes
   d) Each student will present their finalized application that they continuously worked on during the semester.
   e) Code review consists of questions asked about the code the student has 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. Assignments that do not meet the requirements outlined on the assignment sheet may not be accepted or a portion of the marks will be deducted. Marks will be deducted for not following the file format, file naming format, and instructions in the assignment.

Further details and submission procedure will be stated in each assignment.

Students are responsible for backing up and protecting their lab and project work.

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, with no external help allowed, this includes any AI tools that the student might have used before. Code that the student has prepared will only be allowed to be inspected during the code review.

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.

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 2025-26 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

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.

In order to ensure a safe and comfortable learning environment for everyone, we kindly ask that all students refrain from wearing or using scented products while attending class.

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.

Regulations, Policies, and Academic Integrity

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).

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

Detailed information can be found at the following:

- Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/policies/docs/policies/academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/policies/docs/procedures/academic-misconduct-procedures.pdf
- About Academic Integrity and Misconduct, Resources and FAQs: https://library.uwinnipeg.ca/use-the-library/help-with-research/academic-integrity.html

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.

Academic Integrity and AI Text-generating Tools: Students must follow principles of academic integrity (e.g., honesty, respect, fairness, and responsibility) in their use of material obtained through AI text-generating tools (e.g., ChatGPT, Bing, Notion AI). Suspected misuse of AI may result in a report to the Senate Academic Standards and Misconduct Committee. If AI tools are used, students must cite them. According to the MLA (https://style.mla.org/citing-generative-ai/), "you should

a. cite a generative AI tool whenever you paraphrase, quote, or incorporate into your own work any content (whether text, image, data, or other) that was created by it
b. acknowledge all functional uses of the tool (like editing your prose or translating

words) in a note, your text, or another suitable location
c. take care to vet the secondary sources it cites."

Non-academic misconduct: Students are expected to conduct themselves in a respectful manner on campus and in the learning environment, irrespective of the 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/policies/docs/policies/acceptable-use-of-information-technology-policy.pdf
- Non-Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/policies/docs/policies/student-non-academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/policies/docs/procedures/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://www.uwinnipeg.ca/policies/docs/policies/copyright-policy.pdf

Privacy

Students have rights in relation to the collection of personal data by the University of Winnipeg.

- Student Privacy: https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html
- Zoom Privacy: https://www.uwinnipeg.ca/privacy/zoom-privacy-notice.html
- Exam and Proctoring: https://www.uwinnipeg.ca/privacy/zoom-test-and-exam-proctoring.html

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**.**

Please let the 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.