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/75507

Instructor Information

Instructor:	Meharban Singh		
E-mail:	me.singh@uwinnipeg.ca		
Office Hours:	Wednesdays	5:00 pm - 6:00 pm	3C07

Class meeting time: Wednesdays   6:00 pm - 9:00 pm   1L12

Important Dates

1. First Class: Wednesday, January 7, 2026
2. Reading week (no classes):   February 15 - 21, 2026
3. Midterm Tests: Test 1   Wednesday, February 04, 2026
                      Test 2   Wednesday, March 11, 2026
4. Final Withdrawal Date without academic penalty*:   Friday, March 13, 2026
5. Last Class: Wednesday, April 1, 2026
6. Final Exam: TBD
7. Final Exam Period: April 9 - 22, 2026
8. University closures: Louis Riel Day   Monday, February 16, 2026
                         Good Friday   Friday, April 3, 2026
9. Make-up classes on holiday closures: None

*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. Topics include n-tiered systems, session tracking, interfaces and stereotypes, dynamic web page design, database connections, and XML processing. Students gain considerable knowledge and experience by learning important features needed for e-commerce, applying advanced web application techniques, and utilizing web databases.

Evaluation Criteria

1) Assignments (20%)
   - 3 assignments worth 6%, 7%, and 7% respectively.
   - Individual due dates will be posted on Nexus.
   - **No late submissions will be accepted.**
   - 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 tests (40%)
   - 2 in person written tests worth 20% each.
   - The tests are during class time.
   - There would be a lecture after the tests.

3) Final Exam (40%)
   - Cumulative in-person written exam.
   - Date TBD.

Test / Exam Requirements

- Photo ID is required for the final exam.
- The use of computers, calculators, phones, or other electronic devices is not permitted during exams.
- Midterm and final exams are closed-book.

Students should contact the instructor as soon as possible if extenuating circumstances require missing a lab, 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 with accommodations that include more time for assignments must explicitly request extensions to deadlines as they are not granted implicitly for AS-registered students.
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

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%

NOTE: Final grades require departmental/program approval and may be subject to change.

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
- **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 instructor will use Visual Studio Code. 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.**

Prerequisite Information

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."

AI tools are permitted for study purposes only and are prohibited for answering questions, i.e., copying and pasting answers directly from AI tools is prohibited. Students may be asked to review their work with the instructor to show their understanding on submitted work.

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.

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 204-258-3809. 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. Other resources and contact information can be found at the following link: https://www.uwinnipeg.ca/student-wellness/contact-us.html.

Sexual Violence and Human Rights Advisor (SVHRA)

Students who have experienced Sexual Violence can access support from the SVHRA. The SVHRA receives disclosures and can support students with on and off-campus reporting. In collaboration with the Sexual Violence Response Team (SVRT), the SVHRA also provides fast-track referrals to Student Wellness, academic accommodations, security support, and other on and off campus supports. The SVHRA and SVRT operate within a confidential, survivor-centered, and trauma-informed framework. https://www.uwinnipeg.ca/respect/sexual-violence/

Disclosures may be made in-person, email, by text, by phone, or Zoom/Teams.

5Ri55, 5th Floor (Rice Centre)
204.230.6660 – *call or text (confidential line)*
svrt@uwinnipeg.ca

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. Debugging

9. Testing (Time permitting)

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.