



# THE UNIVERSITY OF WINNIPEG

## Applied Computer Science

**Course Number:** ACS-3909-050  
**Course Name:** Advanced Internet Programming  
**Course Webpage:** <http://courses.acs.uwinnipeg.ca/3909-050/>

### Instructor Information

**Instructor:** Dr. Christopher Henry, P. Eng. **Email:** [ch.henry@uwinnipeg.ca](mailto:ch.henry@uwinnipeg.ca)  
**Class Room No:** 3D04 **Class Meeting Time:** Thursday 6:00 – 9:00 pm  
**Office Hours:** Thursday 5:00 – 6:00 pm

### Important Dates

**First Class:** January 4<sup>th</sup>, 2018  
**Assignment 1 due date:** February 1<sup>st</sup>, 2018  
**Reading Week:** February 18<sup>th</sup> – 24<sup>th</sup>, 2019 (No classes)  
**Midterm Test:** February 15<sup>th</sup>, 2018  
**Assignment 2 due date:** March 1<sup>st</sup>, 2018  
**Withdrawal date w/o academic penalty<sup>2</sup>:** March 14<sup>th</sup>, 2018  
**Last Scheduled Class:** March 29<sup>th</sup>, 2018  
**Assignment 3 due date:** April 5<sup>th</sup>, 2018  
**Final Examination (Comprehensive):** April 12<sup>th</sup>, 6:00 – 9:00 pm  
**The University is closed on the following dates:**  
February 19<sup>th</sup>, 2018  
March 30<sup>th</sup>, 2018

<sup>2</sup>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.

### Additional Course Related Information

1. When it is necessary to cancel a class due to exceptional circumstances, instructors will make every effort to inform you via uwinnipeg email, as well as the departmental assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms.
2. Your uwinnipeg email address will normally be used for course related correspondence.
3. Please note that withdrawing before the VW date does not necessarily result in a fee refund.
4. No classes: February 18<sup>th</sup> – 24<sup>th</sup> Mid-term reading week

### Course Objectives/Learning Outcomes

This course will provide students with a thorough knowledge of the server-side web programming. This course will cover two main server-side technologies. The course will investigate these concepts using Node.js, Express, and Meteor, as well as compare and contrast

the differences between these technologies. Students will gain considerable knowledge and experience by learning important features needed in e-commerce, applying advanced web application techniques, and utilizing web databases.

## **Evaluation Criteria**

### **Midterm Examination (26%)**

There will be **one** midterm test.

### **Assignments (24%)**

There will be 3 assignments; each consisting of 8% of your final grade. All work submitted for evaluation must be typed, and code must be commented and formatted.

Late Penalties: A late penalty of 15% a day (for a maximum of 3 days) will be imposed. After 3 days the student will receive a 0. **NO EXCEPTIONS** without medical certificate.

### **Final Examination (50%)**

The final examination is comprehensive.

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

## **Exam Requirements**

- Photo ID is required
- Unless a medical certificate is provided, no accommodation is made for missed exams
- No equipment (*e.g.* calculators, dictionaries, handheld devices) are authorized for use in tests/exams

## **Student Services and Information**

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 786-9771 or [accessibilityservices@uwinnipeg.ca](mailto:accessibilityservices@uwinnipeg.ca) to discuss appropriate options. All information about a student's disability or medical condition remains confidential  
<http://www.uwinnipeg.ca/accessibility>.

All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at [www.uwinnipeg.ca/respect](http://www.uwinnipeg.ca/respect)

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 2017-18 Undergraduate Academic Calendar.

## **Required Textbooks**

### **Main texts:**

- B. A. Syed, *Beginning Node.js*. Cambridge: O'Reilly, 2014.
- E. Brown, *Web Development with Node & Express*.
- T. Coleman, and S. Greif, *Discover Meteor*. [Online]. Available: <http://www.discovermeteor.com/>.

Besides the information contained in the main texts, I may also distribute papers, and discuss appropriate material and examples from other sources. Students are responsible for all material covered in the class.

## **Prerequisite Information** (This information can be found in the UW General Calendar)

A grade of at least C in ACS-2909/3, ACS-2814/3, and ACS-2947.

## **Misuse of Computer Facilities, Plagiarism, Cheating, and Copyright Violation**

Academic dishonesty is a very serious offense and will be dealt with in accordance with the University's discipline bylaw. Be sure that you have read and understood **Regulations & Policies #8**, starting on page 9, in the 2017-2018 UW Course Calendar available at: <http://www.uwinnipeg.ca/index/calendar-calendar>.

Students are strongly recommended to view the University of Winnipeg library video tutorial *Avoiding Plagiarism*, which is available at: <https://www.youtube.com/watch?v=UvFdxRU9a8g>

*Avoiding Academic Misconduct*. Uploading essays and other assignments to essay vendor or essay 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.

*Avoiding Copyright Violation*. Course materials are owned by the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the same class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also obtain instructor/presenter permission before photographing or recording slides, presentations, lectures, and notes on the board.

## **Course Topics**

### Node.js

1. Understanding Node.js
2. Core Node.js
3. Node.js Packages
4. Events and Streams
5. Getting Started with HTTP

### Express

1. Introducing Express
2. Saving Time with Express
3. Quality Assurance
4. The Request and Response Objects
5. Templating with Handlebars
6. Form Handling
7. Cookies and Sessions
8. Middleware
9. Sending Email
10. Production Concerns
11. Persisting Data
12. Rest APIs and JSON
13. Static Content
14. Implementing MVC in Express
15. Security
16. Debugging
17. Deployment and Scalability

### Meteor

1. Deployment
2. Templates & Controllers
3. Collections
4. Publications and Subscriptions
5. Routing
6. Sessions
7. Reactivity
8. Latency Compensation
9. Meteorite Packages
10. Denormalization
11. Notifications
12. Pagination

Note: not all of the above topics may be covered.

## **Course Readings**

Relevant textbook chapters and sections will be given during lectures.

## **Recommended Study Habits**

Students who do well in this class tend to spend an extra 3-5 hours per week doing the following:

- Read the textbook before coming to class
- Attend lectures
- Take notes
- Attempt the problems and exercises at the end of the chapters
- Submit all the exercises and assignments
- Form study groups to study for the midterm and exam
- Regularly ask questions

Advice: Students who fall behind find it very hard to catch up.