THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-3911-001
Course Name: Computer Networks
Course Webpage: https://nexus.uwinnipeg.ca/d2l/home/55498

Instructor Information

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

Office Hours:	Mondays	9:00 - 10:00 am	3D23
Class meeting time:	Tuesday/Thursday	11:30 am - 12:45 pm	2L17

Important Dates

1. First Class:		Tuesday, September 5, 2023
2. Midterm Test		By appointment (see below)
3. No lectures due to midterms		October 17 + October 19
4. Final Withdrawal Date w/o academic penalty*:		Monday, November 13, 2023
5. Last Class:		Thursday, November 30, 2023
6. Final Exam (Comprehensive):		By appointment (see below)
7. University closures:	Truth and Reconciliation Day	Saturday, September 30, 2023
	Thanksgiving	Monday, October 9, 2023
	Remembrance Day	Saturday, November 11, 2023

*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 is an introduction to fundamental concepts in computer networks. It covers the principles, technologies, protocols, and algorithms of computer networks. The layers of the network stack are discussed, with focus on the internet network stack following a top-down approach. Topics of discussion include network technologies, simple and sliding window protocols, routing and routing algorithms, congestion controls, quality of service, security, and network 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 (20%)
   - 4 assignments, worth 5% each
   - Individual due dates will be posted on Nexus
   - All assignment include any or a combination of the following: Theory, analysis, labs, or programming exercises
   - **No late or handwritten assignment will be accepted**.
   - **Assignments can be very time consuming.** All assignments are to be completed individually.
   - 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.
   - A list of tools to be used for lab assignments will be given in Nexus, lectures, and/or the assignment sheets.

3. Midterm Exam (20%)
   - Date by appointment in the week of October 16 to October 20. Schedule for midterm slots will be presented in the lecture. Every student **must** book an appointment to have their midterm exam graded.
   - Total duration per student: appr. 20 minutes
   - Comprehensive oral exam of the material covered so far in the course, labs, and assignments.

4. Final Exam (60%)
   - Date by appointment. Schedule for final exam slots will be presented in the lecture. Every student must book an appointment for final exams.
   - Total duration per student: appr. 40 minutes
   - The final exam covers **all** material discussed in the course, labs, and assignments.

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.

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.

Midterm / Exam Requirements

- Photo ID is required for the final exam and midterm.
- Usage of computers, calculators, phones, or other electronic devices 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

- Computer Networking: A Top-Down Approach (7^{th}/8^{th} Edition)
  Kurose J.F. & Ross K.W.
  Pearson
  ISBN-13: 978-0-13-359414-0
  ISBN-10: 0-13-359414-9
- Class Notes will be available on Nexus

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%

Course outline (tentative)

1) Introduction to computer networks and overview of topics
2) The internet's layer stack:
    a. Application Layer: Network applications (HTTP, FTP,…)
    b. Transport Layer: Multiplexing/demultiplexing, congestion control (UDP, TCP)
    c. Network Layer: Routing algorithms, virtual circuits and datagrams (IP)
    d. Link Layer: Error detection and error correction

3) Selected Topics as time permits:
    a. Wireless Networks
    b. Multimedia Networking
    c. Security in networks
    d. Network management

Note that the topics listed above may be offered in a different order and with varying emphasis.

Prerequisite Information

This information can be found in the UW General calendar:
Requisite Courses: A grade of at least C in ACS-2909(3) and ACS-2913(3) (or the former ACS-2911(3) and ACS-2912(3))

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 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.

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/institutional-analysis/docs/policies/academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/institutional-analysis/docs/policies/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). If an instructor prohibits the use of AI tools in a course, students may face an allegation of academic misconduct if using them to do assignments. If AI tools are permitted, students must cite them. According to the MLA (https://style.mla.org/citing-generative-ai/), writers should

- 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
- acknowledge all functional uses of the tool (like editing your prose or translating words) in a note, your text, or another suitable location
- take care to vet the secondary sources it cites

If students are not sure whether or not they can use AI tools, they should ask their professors.

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/basics/copyright-policy.html

Privacy

Students have rights in relation of the collecting of personal data 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