



# THE UNIVERSITY OF WINNIPEG

## APPLIED COMPUTER SCIENCE

<b>Course Number:</b>	ACS-3911-002
<b>Course Name:</b>	Computer Networks
<b>Course Webpage:</b>	<a href="https://nexus.uwinnipeg.ca/d2l/home/75108">https://nexus.uwinnipeg.ca/d2l/home/75108</a>

### Instructor Information

**Professor:** Yaser Al Mtawa

**Office:** 3D06B

**E-mail:** [y.almtawa@uwinnipeg.ca](mailto:y.almtawa@uwinnipeg.ca)

**Office Hours:** Wednesday, 12:00 pm – 1:00 pm

**Class Meeting Time:** Friday 2:45 PM - 5:45 PM (Duckworth Centre, 3D01 Lecture)

### Important Dates

First Class:	Friday, January 9, 2026
Reading Week (No Classes):	February 15 – 21, 2026
Midterm Exam:	Friday, February 27, 2026
Final Withdrawal Date w/o academic penalty:	Friday, March 13, 2026*
Last Class:	Monday, April 6, 2026**
Final Exam:	TBD
Final Exam Period:	April 9 – 22, 2026
University closures:	Louis Riel Day      Monday, February 16, 2026
	Good Friday      Friday, April 3, 2026

\*(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)

\*\*The make-up day for Good Friday is April 6.

### 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

## **Evaluation Criteria**

### ***Assignments (20%)***

- Four assignments, worth 5 marks each
- Due date will be posted on Nexus
- Due at 11:59 pm (Nexus clock) on due dates
- Late assignments will not be accepted except under special circumstances, and will incur a 20% penalty per day.
- All assignments are to be completed individually and only submitted via Nexus
- Students are responsible for making sure the correct files are submitted through Nexus.

### ***Midterm Exam (28%)***

- The Midterm Exam will cover specific course materials, which will be provided to the students in class.

### ***Class Participation (2%)***

- Participation is essential for deepening learning through engagement, collaboration, and critical analysis. It will be evaluated based on preparation, active engagement, the quality of contributions, consistent participation, and respectful discourse. Note that attendance alone or frequent comments that do not advance the discussion are insufficient for high-quality participation.

### ***Final Exam (50%)***

- The final exam covers all materials discussed in the course.

## **Test / Exam Requirements**

- Photo ID is required for exams.
- The use of all personal electronic devices (including but not limited to computers, calculators, phones, and tablets) is prohibited during exams unless explicitly authorized by the instructor.
- Exams are closed-book unless explicitly authorized by the instructor.

*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](mailto: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>

### **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 - 90%	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(s)/Reading List**

#### **Computer Networking: A Top-Down Approach, 9th ed., 2026**

Authors: Kurose J.F. & Ross K.W

Publisher: Pearson

ISBN-13: 978-0135429334

ISBN-10: 0135429331

Class notes and official announcements will be posted to Nexus. Students are responsible for all material and announcements, whether presented in class, posted online, or communicated via email.

### **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)).

### **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:** AI tools are permitted for study purposes, however, 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. 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/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://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>
- Exam and Proctoring: <https://www.uwinnipeg.ca/privacy/zoom-test-and-exam-proctoring.html>

### **Class Cancellation, Students Correspondence, 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.
  - It is recommended that electronic communication used for the course utilize a UofW email account or the Nexus platform to minimize the risk of filtering. Use 'ACS-3911' as subject in email communication.
- 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.

- Should it become necessary to change the course delivery mode to hybrid or asynchronous delivery, the instructor will notify students promptly through both an in-class announcement and an official notice on Nexus.

## **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](mailto: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, 5<sup>th</sup> Floor (Rice Centre)  
204.230.6660 – call or text (confidential line)  
[svrt@uwinnipeg.ca](mailto:svrt@uwinnipeg.ca)

## **Course Outline (Tentative)**

- 1) Introduction to computer networks and overview of topics
- 2) The internet's layer stack:
  - a) Application Layer: Network applications (HTTP, SMTP, ...)
  - 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 and Mobile Networks
  - b) Network Reliability and Operational Management
  - c) Security in Computer Networks

Note that all topics listed may not be covered and may be offered in a slightly different time order.

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.