



# THE UNIVERSITY OF WINNIPEG

## APPLIED COMPUTER SCIENCE

**Course Number:** ACS-3921-001 / ACS/GACS-4921-001, ACS-3921/4921L-070  
**Course Name:** Computer Security and Privacy  
**Course Webpage:** <https://nexus.uwinnipeg.ca/d2l/home/75603>

### Instructor Information

**Instructor:** Victor Balogun  
**E-mail:** [vi.balogun@uwinnipeg.ca](mailto:vi.balogun@uwinnipeg.ca)  
**Office Hours:** Tuesday 12:00pm – 1:00 pm 3D18  
**Class meeting time:** Mon/Wed 4:00 PM - 5:15 PM 3D01  
**Lab time:** ACS-3921L-070 Wednesday 8:30 am – 9:30 am 3D03  
ACS-4921L-070 Wednesday 8:30 am – 9:30 am 3C13

### Important Dates

1. First Class: Monday, January 5, 2026
2. First Lab: Wednesday, January 14, 2026
3. Reading Week (no classes): February 15 – 21, 2026
4. Midterm Exam: Monday, February 23, 2026
5. Final Withdrawal Date w/o academic penalty\*: Friday, March 13, 2026
6. Last Class: Wednesday, April 1, 2026
7. Final Exam (Comprehensive): Date **TBD**
8. Final Exam Period: April 9 – 22, 2026
9. 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.

## **Course Objectives / Learning Outcomes**

This course introduces students to the security and privacy issues in computer and network systems and related technologies. It covers the fundamentals of computer security such as encryption methods, public key cryptography, hash function and signature schemes, key exchange protocols, authentication and access control models, malicious software, system and network security. The course also examines issues related to the management of IT security like risk assessment, security controls, security audits, privacy, and ethics. GACS-4921 students will also read and analyze scientific papers on topics related to computer security and privacy.

## **Evaluation Criteria For ACS-3921 Students**

### **1. Labs (15%)**

- Based on 10 labs, worth 1.5% each
- Labs are to be completed during the lab period
- No late lab submissions will be accepted

### **2. Quizzes (3 quizzes, to be done in class. Each quiz worths 4%) 12%**

### **3. Midterm Exam (23%) – Monday, February 23, 2026**

- During the regular class time
- Missed exams will receive a mark of zero, unless a medical certificate is provided, no accommodation is made for missed exams.

### **4. Group Discussion and Reflection (10%):**

- It takes place during weekly classes
- Instructor will provide topics of discussion
- Students will discuss in random groups and reflect on Nexus.

### **5. Final Exam (40%) - Date TBD**

- Cumulative
- Students should contact the instructor as soon as possible if extenuating circumstances require missing an assignment, test or examination. A medical certificate from a practicing physician may be required before any accommodation is considered.
- Students are responsible for backing up and protecting their assignments.
- Keep a backup copy of all class work in case there is an error in recording of marks by the instructor.

## **Evaluation Criteria For ACS-4921 Students**

### **1. Labs (15%)**

- Based on 10 labs, worth 1.5% each
- Labs are to be completed during the lab period
- No late lab submissions will be accepted

2. **Quizzes (3 quizzes, to be done in class. Each quiz worths 4%) 12%**
3. **Midterm Exam (18%) – Monday, February 23, 2026**
  - During the regular class time
  - Missed exams will receive a mark of zero, unless a medical certificate is provided, no accommodation is made for missed exams.
4. **Group Discussion and Reflection (10%):**
  - It takes place during weekly classes
  - Instructor will provide topics of discussion
  - Students will discuss in random groups and reflect on Nexus.
5. **Cyber Security Capstone Project – 12%.**
  - This is an individual project.
  - Students will be given potential project topics to select from.
  - Students will present their Capstone Projects towards the end of the term.

*Note: This component is compulsory for students that registered for ACS-4921. A grade of Incomplete will be assigned to any student that fails to complete this assessment.*
6. **Final Exam (33%) - Date TBD**
  - Cumulative
  - Students should contact the instructor as soon as possible if extenuating circumstances require missing an assignment, test or examination. A medical certificate from a practicing physician may be required before any accommodation is considered.
  - Students are responsible for backing up and protecting their assignments.
  - Keep a backup copy of all class work in case there is an error in recording of marks by the instructor.

### **Evaluation Criteria For GACS-4921 Students**

1. **Quizzes (3 quizzes, to be done in class. Each quiz worths 4%) 12%**
2. **Midterm Exam (20%) – Monday, February 23, 2026**
  - During the regular class time
  - Missed exams will receive a mark of zero, unless a medical certificate is provided, no accommodation is made for missed exams.
3. **Group Discussion and Reflection (10%):**
  - It takes place during weekly classes
  - Instructor will provide topics of discussion
  - Students will discuss in random groups and reflect on Nexus.

#### 4. Research/Term Paper – 18%.

- This is an individual work.
- Students will be given a list of technical papers to select from.
- Students will review and perform security assessment of the concepts presented in the paper.
- Students will report the result of their assessments in form of research article and present it in class towards the end of the term.

*Note: This component is compulsory for students that registered for GACS-4921. A grade of Incomplete will be assigned to any student that fails to complete this assessment.*

#### 5. Final Exam (40%) - Date TBD

- Cumulative

#### **Test / Exam Requirements**

- Photo ID is required for mid-term exam and the final exam. Students must be prepared to present their student ID.
- Midterm will be delivered via Nexus and proctored via Respondus.
- The final exam will be delivered in-person at an examination venue to be determined.
- 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](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>

- Since Respondus Proctoring tool products will be used to Proctor Nexus mid-term, please visit the following links for more information on Respondus:  
<https://web.respondus.com/he/lockdownbrowser/>  
<https://web.respondus.com/he/monitor/>

## **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 Text Book / Reading List**

Computer Security: Principles and Practice  
William Stallings & Lawrie Brown  
5th Edition, 2023  
Pearson Education, Inc.  
ISBN-13: 9780138091712

## **Prerequisite Information**

### **Prerequisites (for both ACS 3921 and ACS/GACS 4921):**

(This information can be found in the UW Undergraduate Academic Calendar)

- ACS-2906 and ACS-2947 with a minimum grade of C, or permission of the Department Chair
- **Restrictions:** Students may not hold credit for this course and ACS-4921.

For **ACS 3921** and **ACS 4921**: ACS-3921/4921L (lab) must be taken concurrently

## **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:*** The use of AI tools in this course is prohibited. This includes all forms of generative AI, like ChatGPT, Claude, Gemini, etc., as well as AI writing and paraphrasing tools, such as Grammarly, Quillbot, etc. If you are unsure if the use of a specific technology is permitted, ask the instructor prior to using the tool for coursework. Suspected misuse of AI may result in a report to the Senate Academic Standards and Misconduct Committee.

***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/respondus-privacy-notice.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](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, 5th Floor (Rice Centre)

204.230.6660 – call or text (confidential line) [svrt@uwinnipeg.ca](mailto:svrt@uwinnipeg.ca)

## **Topics to be covered (tentative)**

### **Computer Security Technology and Principles**

Cryptographic Tools

User Authentication

Access Control

Database Security

Malicious Software

Denial of Services Attacks

Intrusion Detection and Prevention Systems/ Firewalls

Wireless Network Security

### **Software and System Security**

Software and Operating system Security

Cloud Computing and Internet of Things Security

### **IT Security Management Issues**

IT Security Management and Risk Assessment

IT Security Controls, Plans, and Procedures

Security Auditing

*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.*