



# THE UNIVERSITY OF WINNIPEG

## APPLIED COMPUTER SCIENCE

**Course Number: ACS-3921-001/ACS-4921-001/GACS-4921-001**

**Course Name: Computer Security and Privacy**

### **Instructor Information**

**Instructor: Philemon Pak**

**Office: 3C08B**

**E-mail: p.pak@uwinnipeg.ca**

**Office Hours: Wed: 14:30 - 15:30**

**Class Meeting Time: Mon & Wed: 16:00 – 17:15**

**Room No: 3D04**

**Course Web Page: <https://courses.acs.uwinnipeg.ca/3921-001>**

### **Important Dates**

First Class: Sep 5<sup>th</sup>, 2018

Midterm Exam: October 17, 2018

Reading Week (No Classes): October 7<sup>th</sup> – Oct 13<sup>th</sup>, 2018

Final Withdrawal Date w/o academic penalty: Nov 12<sup>th</sup>, 2018

(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)

Last Class: Dec 3<sup>rd</sup>, 2018

Final Exam: Dec 12<sup>th</sup>, 2018

Final Exam Location: 3D04

### **Course Objectives/Learning Outcomes**

This course introduces students to the security and privacy issues to computer systems and related technologies. It covers the fundamental of computer security such as encryption methods, public key cryptography, hash function and signature schemes, key exchange protocols, authentication and access control models, and different types of malicious software. The course also examines issues related to the management of IT security like risk assessment, human resource, security audits, privacy and ethic. ACS-4921 students will also undertake a comprehensive case study on a topic related to computer security and privacy.

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

### ***Assignments: 30%***

- There will be 3 assignments worth 10% each.
- Due at 11:59:59 pm on due day.
- No late assignment will be accepted, or under special circumstances accepted with 20% off for each late day.
- Assignments are only submitted by email as PDF (Portable Document Format) files to my University of Winnipeg email account – p.pak@uwinnipeg.ca.
- Multiple submissions are not permitted. Students may submit a partially completed assignment, and will receive credit for those attempted problems.

### ***Midterm Exam: 20%***

- Closed-book in-class midterm exam.

### ***Final Exam: 50%***

- Closed-book final exam.
- The final exam covers all material discussed in the course.

## **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%

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

### ***Assignments: 20%***

- There will be 2 assignments worth 10% each.
- Due at 11:59:59 pm on due day.
- No late assignment will be accepted, or under special circumstances accepted with 20% off for each late day.
- Assignments are only submitted by email as PDF (Portable Document Format) files to my University of Winnipeg email account – p.pak@uwinnipeg.ca.
- Multiple submissions are not permitted. Students may submit a partially completed assignment, and will receive credit for those attempted problems.

### ***Midterm Exam: 20%***

- Closed-book in-class midterm exam.

### ***Case Study (20%)***

- Students will be required to do a comprehensive case study. Topic will be related to computer security and privacy.
- Depending on the class size, students maybe assign into groups, and then the case study will be done as a group project. In this case, there will be additional evaluation criteria on each individual student on their contribution to the overall project in the group.
- Topics on case study to be determined at class.
- Case study will be evaluated on thoroughness of the research; a detail write-up of the finding, lesson learned, and what should or could have been done to prevent the issues from happening again. For group project, individual contribution will be part of the evaluation (more detail will be provided in class and on the course website).
- Case study will consist of a term paper and only submitted by email as PDF (Portable Document Format) files to my University of Winnipeg email account – [p.pak@uwinnipeg.ca](mailto:p.pak@uwinnipeg.ca) on the due day no later than 11:59:59 pm.
- Students will be required to present their case study in class at the end of term.

### ***Final Exam: 40%***

- Closed-book final exam.

## **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%

## **Test/Exam Requirements**

- Photo ID at exam is required.
- You are expected to write the test/exam on its given day.
- No electronic devices (e.g. cell/smart phone, laptop, scientific calculators, translators, etc.) are permitted.
- Midterm and final exams are closed-book.
- Simple calculators can be used though. Simple calculators are subjected to test and can be denied use at mid-term test and final examination times.
- Unless a medical certificate is provided, no accommodation is made for missed exams.

## **Prerequisite and Restriction Information\***

(This information can be found in the UW General calendar)

- A grade of at least C in both ACS-2906(3) and ACS-2947(3), or permission of the Department Chair.
- Restrictions: Students who have taken ACS-3921 will not be eligible to take ACS-4921.

\*Make sure that you have the necessary prerequisites to take this course. If you have not successfully completed the above listed course(s), it is in your interest to go to student registration office and officially drop the course.

## **Email Communication Requirements**

- Emails from accounts at uwinnipeg.ca are usually not filtered by the UofW email filter. Thereby it is recommended electronic communication used for the course utilize a UofW email account to minimize the risk of filtering.
- Use 'ACS-3921/4921' as subject in email communication related to the course.

## **Services for Students**

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>.

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 2018-19 Undergraduate Academic Calendar.

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) .

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

Academic dishonesty is a very serious offense and will be dealt with in accordance with the University's policies. Be sure that you have read and understood Regulations & Policies #8, in the 2018-2019 UW Undergraduate Academic Calendar available at <http://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf> and the UW academic misconduct policy available at <http://pace.uwinnipegcourses.ca/sites/default/files/pdfs/publications/Academic%20Misconduct%20Policy.pdf>

Additional information is available at University of Winnipeg library video tutorial "Avoiding Plagiarism" <https://www.youtube.com/watch?v=UvFdxRU9a8g>

*Avoiding Academic Misconduct.* 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.

*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 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 photographing or recording slides, presentations, lectures, and notes on the board.

## **Required Text Book(s)/Reading List**

Computer Security: Principles and Practice  
William Stallings & Lawrie Brown  
4th Edition, 2018  
Pearson Education, Inc.  
ISBN-13: 978-0-13-479410-5  
ISBN-10: 0-13-479410-9

Class notes and notices will be posted on the course website. Students are responsible for material covered in class and announcements made in class.

## **Course Outline (Tentative)**

### **Computer Security Concepts**

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

Cryptographic Tools  
User Authentication  
Access Control  
Database and Data Centre Security  
Cloud and IoT Security  
Malicious Software  
Denial of Services Attacks  
Intrusion Detection  
Firewall and Intrusion Prevention System  
Software Security  
Operating system Security

#### **IT Security Management Issues**

IT Security Management and Risk Assessment  
IT Security Controls, Plans, and Procedures  
Physical and Infrastructure Security  
Human Resources Security  
Security Auditing  
Legal and Ethical Aspects

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

## **Additional Course Related Information**

1. When it is necessary to cancel a class due to exceptional circumstances, instructors will make every effort to inform students via uwinnipeg email (and/or using the preferred form of communication, as designated in this outline), as well as the Departmental Assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms
2. Students are reminded that they have a responsibility to regularly check their uwinnipeg e-mail addresses (and/or using the preferred form of communication, as designated in this outline) to ensure timely receipt of correspondence from the university and/or their course instructors
3. Please note that withdrawing before the VW date does not necessarily result in a fee refund (November 12 is VW date for classes that begin in September and end in December).
4. No make-up classes scheduled

5. No classes:
  - October 8, 2018 Thanksgiving
  - October 7-13, 2018 Mid-term reading week
  - November 11, 2018 Remembrance Day
  - Dec 22/18-Jan 2/19 University closed