



THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-3921-050/ACS-4921-050

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

Important Dates

First Class: Wed Sep 6, 2017

Midterm Exam: Wed October 18, 2017

Reading Week (No Classes): October 8 – 14, 2017

Final Withdrawal Date w/o academic penalty: Tue Nov 10, 2017

(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: Wed Dec 4, 2017

Final Exam: Wed Dec 20, 2017 @ 13:30

Final Exam Location: 3D04

<http://www.uwinnipeg.ca/exam-schedules/index.html>

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 the beginning of class on due dates.
- No late assignment will be accepted, or under special circumstances accepted with 20% off for each late day.
- Assignments should be handed in by due date on paper typed (no handwritten). Email submission will not be accepted. Handwritten assignments will not be accepted.
- 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.

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 Students

Assignments: 20%

- There will be 2 assignments worth 10% each.
- Due at the beginning of class on due dates.
- No late assignment will be accepted, or under special circumstances accepted with 20% off for each late day.
- Assignments should be handed in by due date on paper typed (no handwritten). Email submission will not be accepted. Handwritten assignments will not be accepted.
- 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, 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).
- Case study will consist of a term paper to be handed in on the last class.
- 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. Email from other accounts will be ignored and discarded.
- 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 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 2017-18 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 .

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 2017-2018 UW Undergraduate Academic Calendar available at <http://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>.

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

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 web page. 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 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: Oct. 8 – 14 Mid-term Fall reading week.