

SENG360: Security Engineering

Course Dates

CRN(s):	Section A01 CRN: 12855 Section A02 CRN: 12856 Section A03 CRN: 12857
Term:	Fall 2019
Course Start:	2019-09-04
Course End:	2019-12-21
Withdrawal with 100% reduction of tuition fees:	2019-09-17
Withdrawal with 50% reduction of tuition fees:	2019-10-08
Last day for withdrawal (no fees returned):	2019-10-31

Scheduled Meeting Times (M=Mon, T=Tue, W=Wed, R=Thu, F=Fri)

Section:	Location:	Classes Start:	Classes End:	Days of week:	Hours of day:	Instructor:
A01	ELL 167	2019-09-04	2019-12-04	MR	08:30-09:50	Adeshina Alani
A02	ELL 167	2019-09-04	2019-12-04	MR	08:30-09:50	Adeshina Alani
A03	ELL 167	2019-09-04	2019-12-04	MR	08:30-09:50	Adeshina Alani
B01	ELW B203	2019-09-09	2019-12-04	T	12:30-14:20	
B02	ELW B203	2019-09-09	2019-12-04	T	15:30-17:20	
B03	ELW B203	2019-09-09	2019-12-04	W	13:30-15:20	
B04	ELW B203	2019-09-09	2019-12-04	R	10:00-11:50	
B05	ELW B203	2019-09-09	2019-12-04	F	12:30-14:20	
B06	ELW B203	2019-09-09	2019-12-04	R	12:00-13:50	

Instructor(s)

Name: Adeshina Alani
Office: ECS 617
Phone: (250) 472-5722
Email: aalani at uvic dot ca

Office Hours:	Comments
Mon 09:50am-10:20am	
Thu 09:50am-10:20am	
Fri 04:00pm-05:00pm	

Course Overview

Security Engineering is about building systems to remain secure in the face of malice, error or mischance. The objective of this course is to introduce students to a broad range of topics related to this discipline, including an overview of computer security, protection, disaster planning, and recovery. Risk analysis and security plans. Basics of cryptography. Public key cryptography and protocols. Security models, kernel design and systems testing. Database, network and Web security. The course discusses applications which need various combinations of confidentiality, availability, integrity and covertness properties; mechanisms to incorporate these properties in systems. Policy and legal issues are also covered

Topics

- What is Security Engineering?
- Cryptographic Tools
- Authentication and Access Control
- Database and Data Centre Security
- Malicious Software
- Denial of Service Attacks and Intrusion Detection
- Firewalls and Intrusion Prevention Systems
- Buffer Overflows
- Software and Operating System Security
- Cloud and IoT Security
- IT Security Management and Risk Assessment
- Human Resources Security, Auditing, Legal and Ethical Issues
- Cryptographic Algorithms
- Network Security

Course Objectives And Learning Outcomes

Upon completion of this course, students will be able to:

- Define the objectives, concepts and methods of security engineering
- Recognize security vulnerabilities in software systems
- Design mitigations for common security vulnerabilities in software systems
- Identify standards and practices used in security assurance programs

Textbooks

Required: Computer Security - Principles and Practice (4th edition)

Authors: William Stallings and Lawrie Brown

Publisher: Pearson

Recommended: Security Engineering - A Guide to Building Dependable Distributed Systems (2nd edition)

Author: Ross Anderson

Publisher: Wiley

Available for free at <http://www.cl.cam.ac.uk/~rja14/book.html>

Labs

This course has a lab component. There will be 10 labs. Labs start in the week of Sept. 16. PLEASE ATTEND THE LAB YOU REGISTERED IN.

Assignments

In this course there will be 10 assignments. Each assignment is worth 5% of your final grade.

Tentative schedule for assignment due dates:

Assignment	Due date
Assignment 1	September 27
Assignment 2	October 4
Assignment 3	October 11
Assignment 4	October 18
Assignment 5	October 25
Assignment 6	November 1
Assignment 7	November 8
Assignment 8	November 15
Assignment 9	November 22
Assignment 10	November 29

Exams

There will be a midterm exam and a final exam including strategic cyber defence activities :

Exam	Worth	When
Midterm	15%	October 17
Group cybersecurity game report and defence strategies presentation	5%	November 25
Final	25%	arranged by the University

Students must achieve a passing grade on the final exam and the overall course in order to pass this course.

For courses which have final exams, students are strongly advised not to make final plans for travel or employment during the exam period since special arrangements will not be made for examinations that may conflict with such plans.

Grading

Coursework	Weight
Assignments	50%
Final	25%
Midterm	15%
Class Attendant and participation	5%
Group cybersecurity game report and defence strategies presentation	5%

Grading System

The University of Victoria follows a percentage grading system in which the instructor will submit grades in percentages. The University will use the following Senate approved standardized grading scale to assign letter grades. Both the percentage mark and the letter grade will be recorded on the academic record and transcripts.

F	D	C	C+	B-	B	B+	A-	A	A+
0-49	50-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100

Grades	Description
A+, A, A-	Exceptional, outstanding or excellent performance. Normally achieved by a minority of students. These grades indicate a student who is <i>self-initiating</i> , <i>exceeds expectation</i> and has an <i>insightful</i> grasp of the subject matter.
B+, B, B-	Very good, good or solid performance. Normally achieved by the largest number of students. These grades indicate a <i>good</i> grasp of the subject matter or <i>excellent grasp in one area balanced with satisfactory grasp in the other areas</i> .
C+, C	Satisfactory, or minimally satisfactory. These grades indicate a <i>satisfactory performance and knowledge</i> of the subject matter.
D	Marginal Performance. A student receiving this grade demonstrated a <i>superficial grasp</i> of the subject matter.
F	Unsatisfactory performance. Wrote final examination and completed course requirements; no supplemental.

Posting of Grades

Typically marks for assignments, examinations, and provisional final grades, are made available through *conneX*, or *CourseSpaces* where each student will be able to view only their own grades. Sometimes numerical marks/grades may be posted publicly to the entire class. In that case, full student numbers or names will not be included with the posted information.

Course Experience Survey (CES)

I value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to the [CES site](#)

You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. I will remind you closer to the time, but please be thinking about this important activity, especially the following three questions, during the course.

- What strengths did your instructor demonstrate that helped you learn in this course?
- Please provide specific suggestions as to how the instructor could have helped you learn more effectively.
- Please provide specific suggestions as to how this course could be improved.

Csc Student Groups

The Computer Science Course Union (<https://onlineacademiccommunity.uvic.ca/cscu/>) serves all students who are either in a computer science program or taking a class in computer science. Please sign yourself up on their mailing list if you would like to be informed about their social events and services.

The Engineering Students' Society (ESS) serves all students registered in an Engineering degree program, including Software Engineering (BSEng). For information on ESS activities, events and services navigate to <http://www.engr.uvic.ca/~ess>.

Course Policies And Guidelines

Late Assignments: No late assignments will be accepted unless prior arrangements have been made with the instructor at least 48 hours before the assignment due date.

Coursework Mark Appeals: All marks must be appealed within 7 days of the mark being posted.

Attendance: We expect students attend all lectures and labs. It is entirely the students' responsibility to recover any information or announcements presented in lectures from which they were absent.

Electronic devices in labs and lectures: No unauthorized audio or video recording of lectures is permitted.

Electronic devices in midterms and exams: Calculators are only permitted for examinations and tests if explicitly authorized and the type of calculator permitted may be restricted. No other electronic devices (e.g. cell phones, pagers, PDA, etc.) may be used during examinations or tests unless explicitly authorized.

Plagiarism: Submitted work may be checked using plagiarism detection software. Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the link given below for the UVic policy on academic integrity. Note that the university policy includes the statement that "A largely or fully plagiarized assignment should result in a grade of F for the course."

The Faculty of Engineering Standards for Professional Behaviour are at <http://www.uvic.ca/shared/shared%5fengineering/docs/professional-behaviour.pdf>

U.Vic guidelines and policy concerning fraud and academic integrity are at <http://web.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html>

U. Vic Privacy Policy: If any student has concerns about their private information being stored or accessed outside of Canada, they are required to inform the course instructor about their concerns before the end of second week of classes.

Equality

This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning (formerly the Resource Centre for Students with a Disability) located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.