CSC361: Computer Communication and Networks

Course Dates

CRN(s):	Section A01 CRN: 10785 Section A02 CRN: 10786 Section A03 CRN: 10787
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	ECS 125	2019-09-04	2019-12-04	MR	11:30-12:50	Mantis Cheng
A02	ECS 125	2019-09-04	2019-12-04	MR	11:30-12:50	Mantis Cheng
A03	ECS 125	2019-09-04	2019-12-04	MR	11:30-12:50	Mantis Cheng
B01	ECS 360	2019-09-09	2019-12-04	M	14:30-15:20	
B02	ECS 360	2019-09-09	2019-12-04	M	15:30-16:20	
B03	ECS 360	2019-09-09	2019-12-04	T	12:30-13:20	
B04	ECS 360	2019-09-09	2019-12-04	T	13:30-14:20	
B05	ECS 360	2019-09-09	2019-12-04	W	12:30-13:20	
B06	ECS 360	2019-09-09	2019-12-04	W	13:30-14:20	
T01	ECS 123	2019-09-09	2019-12-04	F	13:30-14:20	Mantis Cheng

Instructor(s)

Name: **Mantis Cheng**
Office: ECS 632
Phone: (250) 472-5737
Email: mcheng at uvic dot ca

Office Hours:		Comments
Mon	10:00am-11:00am	
Mon	10:00am-11:00am	
Tue	10:00am-11:00am	
Wed	10:00am-11:00am	
Fri	10:00am-11:00am	

Course Overview

The course is an introduction to data communication networks and the design and architecture of TCP/IP protocol stack, which empowers the Internet that connects "everything" and "everyone". The topics covered are all about the TCP/IP protocol stack, including the Application, Transport, Network and Link layers.

Topics

- Introduction

  Internet overview
  Network technologies and structures
  Packet and Circuit Switching
  Network architectures, services and protocols

- Application layer

  Client-server model
  World-Wide Web (WWW)
  Hyper-Text Transfer Protocol (HTTP)
  Domain Name System (DNS)
  Email (POP3/SMTP)
  File Transfer Protocol (FTP)
  Socket Application Programming Interface

- Transport layer

  Transport layer services
  User Datagram Protocol (UDP)
  Transmission Control Protocol (TCP)
  TCP connection management techniques
  TCP flow, error and congestion control

- Network layer

  Network layer services
  Internet Protocol (IP)
  IP Addressing and Forwarding Tables
  Routers and Switches
  Network Address Translation (NAT)
  Address Resolution Protocol (ARP)
  Dynamic Host Configuration Protocol (DHCP)
  Autonomous Systems
  Basic routing algorithms: distance vector and link state
  Internet routing protocols (RIP, OSPF, BGP)

- Link layer

  Link layer services
  Link layer error and flow control techniques
  Medium Access Control (MAC) techniques
  Link layer interworking techniques

Course Objectives And Learning Outcomes

To understand the principles and practice of designing, building, and operating computer networks, particularly the Internet, and the TCP/IP protocol stack, with hands-on programming labs using Python.

From the lectures and online videos, you will learn:

- how the Internet was designed,
- how the TCP/IP stack works,
- how Internet applications are implemented,
- how data are transported over an unreliable network such as the Internet,
- the design principles behind the TCP/IP protocols, and
- how routers/switches operate.

From the programming labs and exercises, you will learn:

- how to use socket programming API to build Internet applications,
- how to analyze network traffic using a packet sniffer such as Wireshark,
- how TCP initiates and take down connections, and sends/receives data,

- the principles of multiplexing/demultiplexing and encapsulation,
- how to evaluate the performance of packet switching networks.

Textbook

Recommended:	Computer Networking: A Top-down Approach featuring the Internet, Fourth (or newer) Edition
	James F. Kurose, Keith W. Ross
	Pearson, ISBN: 0-321-49770-8

Homework

In this course there will be **3** hands-on Python programming labs (worth **7%** each) and **9** exercises (worth **1%** each).

Exams

There will be 1 midterm, 1 wireshark test and 1 final exam.
The midterm exam will be scheduled on **Thursday, Nov. 7, 2019** in class.
Students **must** pass the final exam in order to pass this course, i.e., you **must** obtain at least 50 points out of 100 points in the final exam.
The final exam will be scheduled during the regular exam period.
Students should **not** make any travel plan before the final exam date is announced.

Term Schedule

This schedule is subject to change.

Category	Weight	Due Date
Lab 1	7%	3rd week
Lab 2	7%	7th week
Lab 3	7%	12th week
Exercises	9%	weekly
Midterm	15%	Thursday, Nov. 7, 2019
Wireshark Test	5%	During the last week of class
Final Exam	50%	During final exam period

Exercises will be made available at the beginning of term. Do them at your own pace. Exercises and programming labs will be evaluated in person during the weekly lab sessions in room ECS 360. There will be an **optional** weekly tutorial designed to help students on the exercises.

Grading

Coursework	Weight (out of 100%)
3 Programming Labs	21%
9 Exercises	9%
Midterm Exam	15%
Wireshark Test	5%
Final Exam	50%

Students **must** pass the final exam in order to pass this course, i.e., you **must** obtain at least 50 points out of 100 points in the final exam.

Attendance: Students **are** required to attend **all** lectures. A student who missed **3** or more lectures **won't** be allowed to write the final exam, as a result will fail the course.

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 *self-initiating*, *exceeds expectation* and has an *insightful* 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 *good* grasp of the subject matter or *excellent grasp in one area balanced with satisfactory grasp in the other areas*.
C+, C	**Satisfactory**, or **minimally satisfactory**. These grades indicate a *satisfactory performance and knowledge* of the subject matter.
D	**Marginal Performance**. A student receiving this grade demonstrated a *superficial grasp* 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.