



THE UNIVERSITY OF WINNIPEG

ACS-3911-050
Winter 2020
Computer Network

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THE UNIVERSITY OF WINNIPEG

ACS-3911-050

Winter 2020

Computer Network

Class Meeting Time: Mon: 18:00 – 21:00

Room No: 3D04

Instructor: Philemon Pak

Office: 3C07

Office Hours: Wed: 16:30 - 17:30

E-mail: p.pak@uwinnipeg.ca

Course Website: <https://courses.acs.uwinnipeg.ca/3911-050>

- **Introduction**
- **Course Outline**
 - Course Objectives
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Philemon Pak B.A., CISA, CISM, CRISC

- Graduated in 86 at the University of Winnipeg
- Major in Business Computing (Currently Applied Computer Science)
- Work in the IT industries for over 30 years and counting
- Worked in both private and public sectors
- Work experience from application programmer to IS auditor, and anything in-between
- Currently an independent IT consultant specialize in IS audit, security, risk and governance
- Hold certification in IS audit, Security, Risk Management and CSX Cybersecurity Fundamental
- ISACA Winnipeg Chapter certified CSX Cybersecurity Fundamental trainer
- Member of the Information Systems Audit and Control Association (ISACA)
- Director of Academic, Director of Designations and Cybersecurity Nexus (CSX) Liaison for the Winnipeg ISACA Chapter

This course is an introduction to fundamental concepts in computer networks. It covers the *principles, technologies, protocols, and algorithms* of computer networks. The layers of the network stack are discussed, with particular focus on the **Internet Network Stack (TCP/IP)** following a top-down approach. Topics of discussion include network technologies, simple and sliding window protocols, routing and routing algorithms, congestion controls, quality of service, security, and network applications

ACS-3911-050– Important Dates



First Class:	Jan 6 th , 2020
Midterm Exam:	Feb 24 th , 2020 (in class hours, first half)
Reading Week:	Feb 16 th – Feb 22 th , 2020 (No Class)
Final Withdrawal Date w/o Academic Penalty:	Mar 13 th , 2020
(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:	Mar 30 th , 2020
Final Exam:	Apr 20 th , 2020 18:00 – 21:00

Note: No class next Monday Jan 13th (away on a conference), a make-up class will be schedule towards the end of the term.

ACS-3911-050 – Prerequisite and Restriction



Prerequisites:

A grade of at least C in ACS-2909(3), ACS-2913(3) (or the former ACS-2911(3) and ACS-2912(3))

*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.

I. Introduction

- Computer networks: overview of topics, protocol layers.

II. Core Layers

- Application layer: network applications, HTTP, FTP, DNS.
- Transport layer: multiplexing/de-multiplexing, UDP, TCP, congestion control.
- Network layer: routing algorithms, virtual circuit and datagram, IP.
- Link layer: error detection/correction.

III. Selected Network Topics

- Wireless networks: wireless characteristics, CDMA.
- Multimedia networking: applications, streaming, VOIP, real time protocols.
- Security: cryptography, digital signatures, authentication, secure applications.
- Network Management: infrastructure, internet-standard management framework.

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

Required Text Book(s)/Reading List

Computer Networking: A Top-Down Approach

Kurose J.F. & Ross K.W.

Pearson, 7th Edition, 2017

ISBN-13: 978-0-13-359414-0

ISBN-10: 0-13-359414-9

And any additional reading materials that will be provided in class.

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

Assignments: 20%

- There will be **4** assignments worth 5% each.
- May include any or a combination of the following:
 - Theory, analysis, labs or programming exercises,
- Assignments are to be submitted by email in PDF (Portable Document Format) format to a designated email account (will let you know in class).
- When sending the file via email, please name the file with your name, student ID and the assignment number, e.g. John Doe – 12345 – Assignment 1. And the subject line on the email should have the course number and assignment no., i.e. “ACS-3911-050 Assignment X” where “X” is the assignment number.
- Marks will be deducted for not following the file submission format, file naming format, and instruction in the assignment.

Assignments: 20% (cont.)

- Multiple submissions are not permitted. Students may submit a partially completed assignment and will receive credit for those attempted problems.
- Due at 11:59:59 pm on due day.
- No late assignment will be accepted, and only under special circumstances e.g. medical, death in a family, etc. Circumstances are subject to approval before late assignment will be accepted and with a 20% penalty off for each late day.
- Tools for programming and labs
 - Python v2.7.8
 - Wireshark v2.6.4+

Midterm Exam: 30%

- Closed-book in-class midterm exam.
Note: The midterm exam is carried out on the first half of the exam session day. In the second half we have class session as usual.

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	70 - 74%	F	below 50%
A	85 - 90%	C+	65 - 69%		
A-	80 - 84%	C	60 - 64%		
B+	75 - 79%	D	50 - 59%		

ACS-3911-050 – 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.

ACS-3911-050 – Services to 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 204-786-9771 or 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 2019-20 Undergraduate Academic Calendar online at <http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf>

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 <https://www.uwinnipeg.ca/respect>.

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.
- The email sent to the instructor must include your **full name, your student #, and the COURSE # WITH YOUR COURSE SECTION #** (like *ACS-3911-050*) in the subject line of your email. If your email address already includes your name (like in UW's webmail) then you can skip typing your name there. A respectful manner is also expected in the email communications.

Misuse of Computer Facilities, Plagiarism, and Cheating

Academic dishonesty is a very serious offense and will be dealt in accordance with the University's policies.

Avoiding Academic Misconduct and Non-academic Misconduct. 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). Please note, in particular, the subsection of Student Discipline pertaining to plagiarism and other forms of cheating.

Misuse of Computer Facilities, Plagiarism, and Cheating (cont.)

Detailed information can be found at the following:

- Academic Misconduct Policy and Procedures:
<https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-policy.pdf> and <https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf>
- Non-Academic Misconduct Policy and Procedures:
<https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-policy.pdf> and <https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-procedures.pdf>

Misuse of Filesharing Sites. 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.

Misuse of Computer Facilities, Plagiarism, and Cheating (cont.)

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.

ACS-3911-050 – Additional Information



- 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
- 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
- Please let 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.
- Please note that withdrawing before the VW date does not necessarily result in a fee refund
 - Mar 13, 2020 is final VW date for classes that begin in January and ends April 1st

ACS-3911-050 – Additional Information (cont.)



- Make-up classes scheduled:
 - TBD
- No classes:
 - February 16 – February 22 - Reading Week – No Classes



QUESTIONS



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