THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number - ACS-3911-001
Course Name – Computer Networks

Instructor Information

Instructor: **Prof. Sergio G. Camorlinga**   **Office:** 3D29
E-mail: **s.camorlinga@uwinnipeg.ca**   **Office Hours**: Th: 16:00 - 17:00 p.m.
                                                                or by email appointment

Class Meeting Time: Tu,Th: 14:30 – 15:45 p.m.   **Room No:** 3D04
Course Web Page: https://courses.acs.uwinnipeg.ca/3911-001
Instructor's Home Page: www.acs.uwinnipeg.ca/scamorlinga

Important Dates

First Class: Thu Jan 5, 2017
Reading Week (No classes)   Feb 19 – 25, 2017
Midterm Exam: Thu Feb 16, 2017
Final Withdrawal Date w/o academic penalty: Wed Mar 1, 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: Tue April 4, 2017
Final Exam: Fri April 7, 2017 @ 1:30 pm

Course Objectives/Learning Outcomes

This course is an introduction to fundamental concepts in computer networks. It covers the principles, technology, protocols, and algorithms of computer networks. The layers of the network stack are discussed, with particular focus on the internet network stack following a top-down approach. Topics of discussion include network technologies, simple and sliding window protocols, routing and routing algorithms, congestion control, quality of service, security, and network applications.

Evaluation Criteria

- Assignments: 10%
    - There will be 4 assignments worth 2.5% each.
        - May include theory, analysis, labs and/or programming exercises.
    - 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 hand in by due date on paper (no handwritten) unless email submission is requested. 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.
    - Tools for programming and labs
        - Wireshark v2.2.2 or later
        - Python from Enthought Canopy v1.7.4 or later
        - Java v1.8.0_111 or later
- PowerPoint paper presentation 5%
- Midterm Exam: 35%
    - 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%

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.
- 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.

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.

Services for Students with Disabilities

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

Indigenous students seeking additional supports, academic or other, are encouraged to contact the Aboriginal Student Services Centre (ASSC). The ASSC offers a variety of support services, and was created to maintain a safe, educational and culturally sensitive environment for all Aboriginal students (First Nation, Metis and Inuit) as they pursue their academic studies at The University of Winnipeg. More information can be found at: http://www.uwinnipeg.ca/assc/

Students facing a charge of academic or non-academic misconduct may choose to contact the University of Winnipeg Students' Association (UWSA) where a student advocate will be available to answer any questions about the process, help with building a case, and ensuring students have access to support. For more information or to schedule an appointment, visit our website at www.theuwsa.ca/academic-advocacy or call 204-786-9780.

We ask that you please be respectful of the needs of classmates and instructors/professors by avoiding the use of unnecessary scented products while attending lectures. Exposure to scented products can trigger serious health reactions in persons with asthma, allergies, migraines or chemical sensitivities. Please consider using unscented necessary products and avoiding unnecessary products that are scented (e.g. perfume).

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 #9, in the 2016-2017 UW Graduate Academic Calendar (http://uwinnipeg.ca/academics/graduate-calendar/docs/grad-regandpols.pdf).

Required Text Book

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

Prerequisite and Restriction Information[*]

(This information can be found in the UW Academic Calendar in the All Course Description document)

- Requisite Courses: ACS-2909 and ACS-2913 (or the former ACS-2911 and ACS-2912) with a minimum grade of C (prerequisite).

*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.

Course Outline (Tentative)

I. Introduction
- Computer networks: overview of topics, protocol layers.

II. Core Layers
- Application layer: network applications, HTTP, FTP, DNS.
- Transport layer: multiplexing/demultiplexing, 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.

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 result in a fee refund.

4. Class make-up days are scheduled at the end of term for courses that conflict with holidays.