WILFRID LAURIER UNIVERSITY

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Course Syllabus
CP 372: Computer Networks
Department of Physics and Computer Science
Winter 2020

I acknowledge that in Kitchener, Waterloo, Cambridge and Brantford we are on the traditional territory of the Neutral, Anishnawbe, and Haudenosaunee peoples.

Instructor Information
Instructor: Masoomeh Rudafshani
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Course Information

An introduction to the fundamental concepts in computer networking. Topics include overview of network architectures, applications, network programming interfaces (e.g., sockets), transport, congestion, routing, and link-layer protocols, addressing, local area networks, SDN Networks, wireless networks, and network security.

Class Schedule	MW 2:30 p.m. - 3:50 p.m.
Class Location	Science building N1001
Pre-requisites	CP 213, CP 264 or CP 386
Office Hours	MW: 11:30 a.m. - 12:30 p.m.

Course Overview and Approach

This course provides an introduction to the basics of networking. Examples will be drawn primarily from the Internet protocol suite, e.g., TCP, UDP, and IP. The objectives of this course are:

- To understand the underlying principles of computer networking, and the internet, as an example of a computer network in vast usage today.
- Understanding the engineering of the Internet including goals, constraints, solutions, and experiences.
- To gain the basic skills for building and maintaining Network applications

The students meet the objectives of the course by participating and following through the assigned tasks. The instructor will try to make the class interactive by asking questions randomly or through a system similar to iClicker.

Course Goals and Learning Outcomes
By the end of this course students should be able to:

- Describe how the internet applications are working
- Develop networking applications using sockets
- Understand how the bits are sent over wire, including framing, error correction, multi-access (Ethernet), packet switching, addressing and forwarding (IP), routing, reliable transport, congestion control (TCP), quality of service, naming (DNS), software defined networks (SDN), and security.

Course Tools and Learning Materials
- All the course materials, information, and assignments will be posted on MyLearningSpace: Laurier's MyLearningSpace course login page.
- **Required textbook:**
  - **Computer Networking: A Top Down Approach, 7th edition, J.F. Kurose & K.W. Ross. Published by Pearson/Addison-Wesley ©2017.**
- **Lecture slides** are provided by the instructor for each week and will be posted on MLS.

Student Evaluation

Assessment	Weighting
Programming Assignments	30%
surprise quizzes	5%
Class participation	5%
Midterms	20%
Final Exam	40%
Total	**100%**

Course Passing Requirement
Students must pass the tests in order to pass the course (weighted average of the midterms and finals needs to be greater than 49%).

Programming Assignments:
To learn the concepts taught throughout the course, the students have to do all the programming assignments. By doing programming assignments, the students will learn how to develop network applications as well as design and implement network protocols.
- **Submitting assignments:** Each assignment and homework should be prepared and submitted according to the instructions provided by the instructor. The assignments are posted on MLS along with the instructions.
- **Late Policy:** All the assignments are due on the date and time specified by the instructor. For the entire semester, you have three free "late days". It is strongly advised

to save them for emergencies. If you do not have any remaining late days, assignments and homeworks are accepted with a 20% of the assignment's maximum point per day late. No assignment may be submitted more than two days late.
- If you have any question or concern regarding the grading of your assignment you must contact the course instructor **within two weeks** after the graded assignment is made available to you (not at the end of the term).
- The first and second assignments should be done in group and the third assignment must be done individually. Refer to university policy on plagiarism mentioned in the rest of this document.

Class Participation and surprise quizzes

- Attendance are not checked in each session. However, you are responsible for all the material covered in class.
- A system similar to iClicker will be used in class to make sure the students are following the lectures.
- In select-class we will be having surprise quizzes. The contents of the quizzes are the topics discussed on the same day.
- Answering these questions will count towards the final grade in the course.

Exams

There are three exams in this course: one final exam and two (in-class) midterm exams.

- The exams are closed books.

- The midterm exams are done in class.

Tentative Weekly Schedule

Week #	Day	Date	Topic/ Unit of Study	Due dates	Resources
Week 1	Mon.	Jan. 6	Introduction		
	Wed.	Jan. 8	packet switching Circuit Switching access networks delay loss, throughput		
Week 2	Mon	Jan. 13	Socket Programming with UDP and TCP traceroute/ Layering / Security		
	Wed	Jan. 15	Internet history Application Layer:		
Week 3	Mon	Jan. 20	Application Layer		
	Wed	Jan. 22	Application Layer		

Week 4	Mon	Jan. 27	Application Layer		
	Wed	Jan. 29	Transport Layer		
	Fri	Jan. 31		Assignment 1: Implementing a client-server application using stream socket API	
Week 5	Mon	Feb. 3	Transport Layer		
	Wed	Feb. 5	Transport Layer		
Week 6	Mon.	Feb. 10	**Midterm 1**		
	Wed.	Feb. 12	Network Layer		
Week 7 Reading Week	Mon.	Feb. 17			
	Wed.	Feb. 19			
Week 8	Mon.	Feb. 24	Network Layer		
	Wed.	Feb. 26	Network Layer		
	Fri.	Feb. 28		Assignment 2: implementing a simple reliable transport protocol	
Week 9	Mon.	Mar. 2	Link Layer		
	Wed.	Mar. 4	Link Layer		
Week 10	Mon.	Mar. 9	**Midterm2**		
	Wed.	Mar. 11	Link Layer		
Week 11	Mon.	Mar. 16	Security		
	Wed.	Mar. 18	Security		
Week 12	Mon.	Mar. 23	Security		
	Wed.	Mar. 25	Security		
	Fri.	Mar. 27		Assignment 3: routing	
Week 13	Mon.	Mar. 30	Final exam review		
	Wed.	Apr. 1	Final exam review		

University and Course Policies

1. **Academic Calendars:** Students are encouraged to review the [Academic Calendar](#) for information regarding all important dates, deadlines, and services available on campus.

2. **Special Needs:** Students with disabilities or special needs are advised to contact Laurier's Accessible Learning Centre for information regarding its services and resources.

3. **Classroom Use of Electronic Devices:** Cell phones must be turned off /silent mode (buzzer is off) during class time – see [Policy 9.3](#) (Approved by Senate March 8, 2012).

4. **Final Examinations:**

5. In every email correspondence with the instructor, put the class number **CP 467** and a brief summary of your message in your email subject: e.g., Subject: CS467 A question on HTML

6. **Plagiarism:** Wilfrid Laurier University uses software that can check for plagiarism. If requested to do so by the instructor, students are required to submit their written work in electronic form and have it checked for plagiarism. (Approved by Senate May 14, 2002) .

Academic Integrity: Laurier is committed to a culture of integrity within and beyond the classroom. This culture values trustworthiness (i.e., honesty, integrity, reliability), fairness, caring, respect, responsibility and citizenship. Together, we have a shared responsibility to uphold this culture in our academic and nonacademic behaviour. The University has a defined policy with respect to academic misconduct. As a Laurier student you are responsible for familiarizing yourself with this policy and the accompanying penalty guidelines, some of which may appear on your transcript if there is a finding of misconduct. The relevant policy can be found at Laurier's [academic integrity](#) website along with resources to educate and support you in upholding a culture of integrity. Ignorance is not a defense.

University Resources:

- Good2Talk is a postsecondary school helpline that provides free, professional and confidential counselling support for students in Ontario. Call 1-866-925-5454 or through 2-1-1. Available 24-7.

- [Waterloo Student Food Bank](#): All students are eligible to use this service to ensure they're eating healthy when overwhelmed, stressed or financially strained. Anonymously request a package online 24-7. All dietary restrictions accommodated.

- [Waterloo Foot Patrol](#): 519.886.FOOT (3668). A volunteer operated safe-walk program, available Fall and Winter daily from 6:30 pm to 3 am. Teams of two are assigned to escort students to and from campus by foot or by van.

- [Waterloo Student Wellness Centre](#): 519-884-0710, x3146. The Centre supports the physical, emotional, and mental health needs of students. Located on the 2nd floor of the Student Services Building, booked and same-day appointments are available Mondays and Wednesdays from 8:30 am to 7:30 pm, and Tuesdays, Thursdays and Fridays from 8:30 am to 4:15 pm. Contact the Centre at x3146, wellness@wlu.ca or @LaurierWellness. After hours crisis support available 24/7. Call 1-844-437-3247 (HERE247).