

Course Syllabus

CP 372: Computer Networks

Department of Physics and Computer Science
Winter 2021

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 and applications, network programming interfaces (e.g., sockets), transport, 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. The videos and slides will be posted ahead of time. The zoom meetings are set up at this time to answer questions, if any.
Pre-requisites	CP 213, CP 264 or CP 386
Office Hours	Wednesdays 0 11-12 or by appointment. It is done through zoom meetings.

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.
- To examine the engineering of the Internet including goals, constraints, solutions, and experiences.
- To gain the basic skills for developing Network applications

The students meet the objectives of the course by participating and following through the assigned tasks.

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
- Examine how the bits are sent over the Internet, including framing, error correction, multi-access (Ethernet), reliable transport, congestion control (TCP), packet switching, addressing and forwarding (IP), routing, 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.**
 - **The textbook will be available electronically on MLS.**
- **Lecture slides and videos:** are provided by the instructor for each topic and will be posted on MLS.
- **Discussion forum:** It is used to answer questions related to all students. The instructor will provide instructions on how to use the discussion forum in the first week of the course. In addition, it is used as a tool to allow students to communicate with each other while the instructor supervises the communications.

Student Evaluation

Assessment	Weighting
Programming Assignments	30%
Participation	3%
quizzes	17%
Midterm	20%
Final Exam	30%
Total	100%

Course Passing Requirement

Students must pass the exams and assignments in order to pass the course: weighted average of the midterm and final needs to be greater than 49%; weighted average of the assignments must 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 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 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).
- All the assignments should be done in groups of two, not more. If you prefer working individually, let the instructor know ahead of time. Refer to university policy on plagiarism mentioned in the rest of this document.

Lectures

- The **lecture videos** along with the **lecture slides** will be posted before the scheduled class time (on Monday and Wednesday).
- I will run zoom meetings at the scheduled class time. The purpose is to answer questions regarding the same day topics.
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Participation

- In the remote course offering, participation means your activities in the discussion forum.
- The students are highly encouraged to ask clarification questions in the discussion forum.
- The students who know the answer are highly encouraged to answer the questions, if they know the answer.
- The instructor oversees the activities in the discussion forums and participates if necessary.
- Any negative/disturbing message on the discussion forum results in negative participation mark

Quizzes and Exams

- The quizzes and the midterm will be done during the scheduled class time.
- The quizzes may ask questions covering topics taught on the same day.
- **The exams and quizzes are open books.** You can use the provided slides. However, the time is limited.
- The final exam will be done during the final exam period and is scheduled by the university.
- The details on each quiz/midterm will be posted on MLS. The quizzes and the exams are done using the lockdown browser and respondus monitor. **In addition, as part of the exams/quizzes you may be asked to write on a paper and submit to the appropriate dropbox on MLS. Make sure you practice that ahead of time. Only pdf files are accepted.**

The information regarding the use of the LockDown browser and respondus monitor follows the course schedule in this syllabus.

Tentative Weekly Schedule

The following is a tentative schedule. The exact dates and times will be posted on MyLearningSpace.

Week #	Day	Date	Topic/ Unit of Study	Due dates
Week 1	Mon.	Jan. 11	Introduction	
	Wed.	Jan. 13	packet switching,Circuit Switching, access networks delay, loss, throughput	
Week 2	Mon	Jan. 18	Socket Programming with UDP and TCP traceroute/ Layering / Security	
	Wed	Jan. 20	Internet history Application Layer:	Quiz1
Week 3	Mon	Jan. 25	Application Layer	
	Wed	Jan. 27	Application Layer	
Week 4	Mon	Feb. 1	Application Layer	Quiz 2
	Wed	Feb. 3	Transport Layer	
Week 5	Mon	Feb. 8	Transport Layer	Assignment 1: Proxy Servers
	Wed	Feb. 10	Transport Layer	Quiz 3
Week 6 Reading Week	Mon.	Feb. 15		
	Wed.	Feb. 17		
Week 7	Mon.	Feb. 22	Transport Layer	
	Wed.	Feb. 24	Midterm	
Week 8	Mon.	Mar. 1	Transport Layer	
	Wed.	Mar. 3	Network Layer	Quiz4
Week 9	Mon.	Mar. 8	Network Layer	Assignment 2: simple reliable transport protocol
	Wed.	Mar. 10	Network Layer	
Week 10	Mon.	Mar. 15	Network Layer	
	Wed.	Mar. 17	Network layer	
Week 11	Mon.	Mar. 22	Network layer	Quiz 5
	Wed.	Mar. 24	link layer	
Week 12	Mon.	Mar. 29	link layer	
	Wed.	Mar. 31	link layer	
Week 13	Mon.	Apr. 5	security	
	Wed.	Apr. 7	security	Quiz6
	Fri.	Apr. 9		Assignment 3: routing algorithms
Week 14	Mon.	Apr. 12	review	

Information regarding LockDown Browser and Respondus Monitor

LockDown Browser + Webcam Requirement

This course requires the use of LockDown Browser and a webcam for online exams. The webcam can be the type that's built into your computer or one that plugs in with a USB cable.

Watch this brief video to get a basic understanding of LockDown Browser and the webcam feature.

<https://www.respondus.com/products/lockdown-browser/student-movie.shtml>

Download Instructions

- Select the quiz in the course
- Under Quiz Requirements you will see "To take this quiz you must use the Respondus LockDown Browser"
- Below this will appear: "You can use the button below if you have not already downloaded LockDown Browser". Click the button to go to the download page and then follow the instructions
- Use the link to download Respondus LockDown Browser to your computer; follow the installation instructions
- Return to the Quiz page in Brightspace (it may still be open in another tab) and select the quiz
- Select "Launch LockDown Browser"
- The quiz will now start

Note: LockDown Browser only needs to be installed once to a computer or device. It will start automatically from that point forward when a quiz requires it.

Guidelines

When taking an online quiz, follow these guidelines:

- Ensure you're in a location where you won't be interrupted
- Turn off all other devices (e.g. tablets, phones, second computers) and place them outside of your reach
- Before starting the test, know how much time is available for it, and also that you've allotted sufficient time to complete it
- Clear your desk or workspace of all external materials not permitted - books, papers, other devices
- Remain at your computer for the duration of the test
- If the computer, Wi-Fi, or location is different than what was used previously with the "Webcam Check" and "System & Network Check" in LockDown Browser, run the checks again prior to the exam
- To produce a good webcam video, do the following:
 - Avoid wearing baseball caps or hats with brims
 - Ensure your computer or device is on a firm surface (a desk or table). Do NOT have the computer on your lap, a bed, or other surface where the device (or you) are likely to move
 - If using a built-in webcam, avoid readjusting the tilt of the screen after the webcam setup is complete
 - Take the exam in a well-lit room, but avoid backlighting (such as sitting with your back to a window)

- Remember that LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted

Getting Help

Several resources are available if you encounter problems with LockDown Browser:

- The Windows and Mac versions of LockDown Browser have a "Help Center" button located on the toolbar. Use the "System & Network Check" to troubleshoot issues. If an exam requires you to use a webcam, also run the "Webcam Check" from this area
- [As applicable, insert information about your institution's help desk, including details about how to contact them. Some help desks want students to run the "System & Network Check" and the "Webcam Check" before they are contacted - and even, to forward the results of these checks at the time of opening a ticket.]
- Respondus has a Knowledge Base available from support.respondus.com. Select the "Knowledge Base" link and then select "Respondus LockDown Browser" as the product. If your problem is with a webcam, select "Respondus Monitor" as your product
- If you're still unable to resolve a technical issue with LockDown Browser, go to support.respondus.com and select "Submit a Ticket". Provide detailed information about your problem and what steps you took to resolve it

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 372** and a brief summary of your message in your email subject: e.g., Subject: CS372: A question on ICMP
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).