



CIS*3210 Computer Networks

Fall 2020

Section(s): C01

School of Computer Science

Credit Weight: 0.50

Version 1.00 - September 02, 2020

1 Course Details

1.1 Calendar Description

This course covers the high-level (protocol) oriented aspects of computer networks, specifically: application, session, transport and network layers. It includes the Internet, socket-level programming, multimedia and quality of service issues. The hardware aspects (switches, LANs, modems, transmission paths) are only covered at a functional level.

Pre-Requisites: CIS*3110

1.2 Course Description

Computer networking has become increasingly important as we become more dependent on the Internet. The Internet is becoming more integrated in our lives. An increasingly large number of people rely on the Internet to communicate with one another, search for information on the most diverse topics, shop online, etc. It is therefore important for computer scientists and computer engineers to be familiar with the fundamentals as well as practices of computer networking. This course covers the high-level (protocol) oriented aspects of computer networks, specifically: application, session, transport and network layers. It includes the Internet, socket-level programming, multimedia and quality of service issues. The hardware aspects (switches, LANs, modems, transmission paths) are only covered at a functional level.

1.3 Timetable

Timetable is subject to change. Please see WebAdvisor for the latest information.

1.4 Final Exam

No final exam.

2 Instructional Support

2.1 Instructional Support Team

Instructor: Greg Klotz Ph.D.
Email: gklotz@uoguelph.ca
Office Hours: Please include CIS*3210 in email subjects.

2.2 TAs

TBA

3 Learning Resources

3.1 Recommended Resources

Computer Networking: A Top-Down Approach, J. Kurose and K. Ross (Textbook)

https://www.campusebookstore.com/integration/AccessCodes/default.aspx?bookseller_id=247&Course=

Not required. The link is for the 8th edition, and it's an online book.

High Performance Browser Networking (Website)

<https://hpbn.co>

Basics on networking with a focus on software. Available as a book or free online.

Beej's Guide to Network Programming: Using Internet Sockets (Website)

<https://beej.us/guide/bgnet/>

3.2 Additional Resources

Computer Networks, A. Tanenbaum (Textbook)

Not required. Bottom up networking book. Starts from the hardware and explains layers going up from there. If you plan to do further work with networking hardware this would be a good resource.

4 Learning Outcomes

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1.
 1. Define and describe the layered structure of a typical networking architecture
 2. Identify the key components of a network
 3. Describe the components of IPv4 and IPv6 protocols, including addressing, routing and forwarding

4. Evaluate error detection/correction mechanisms in different network contexts
5. Judge the effectiveness of existing or similar network protocols
6. Implement network applications using reliable and unreliable socket communication
7. Analyze network traffic using Wireshark
8. Describe common network vulnerabilities and exploits, as well as the methods for mitigating them

5 Teaching and Learning Activities

6 Assessments

6.1 Assessment Details

Full Stack Web Application Development (40%)

Date: Fri, Sep 18 - Fri, Nov 20

10 weekly labs, 4% each. Labs build on each other. Students develop a web application using server side and client side code, integrating with data/pictures/movies/video chat, etc. from an external source. The focus is not on web design. It's on server side processing (what gets sent to client, which data is processed here, when does the server interact with clients), client side processing (rendering, when to get data from the server, how to update content from the server or external resource without reloading the page), organizing that data (server side database and processing), good data formats for communication (JSON). By the end students should have a fully working web application. In past years students have made cookbook websites (save recipes, pictures, etc.), scheduling reminder websites with texting, movie search and sort websites, etc.

Weekly Quizzes (10%)

Date: Fri, Sep 18 - Fri, Nov 27

CourseLink Quizzes over 12 weeks each Friday, 1% each. Top 10 grades count towards the 10%.

C Socket Client/Server (10%)

Date: Fri, Oct 2

C Socket Client/Server version 2 (10%)

Date: Fri, Oct 23

Video presentation of a network protocol (25%)

Date: Fri, Oct 30

You will create a 5 minute video presentation of a network protocol. Details TBA.

1 minute video demo of your final lab ~~(0%)~~ 5%

Date: Wed, Nov 25

Presentation of your final lab. Details TBA.

7 Course Statements

7.1 Online activities

Online activities such as advising times, question and answer sessions, and interactive lectures may be recorded by the instructor or TAs and posted to Courselink. By taking this course you are agreeing that your participation in these activities can be used in this manner. If you do not wish to have your image or voice recorded as part of these activities then either do not take this course or do not ask verbal questions during these activities.

8 University Statements

8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website

<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website

<https://www.ridgetownc.com/services/accessibilityservices.cfm>

8.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be

construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

8.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

8.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via CourseLink and/or class email. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

8.10 Illness

The University will not require verification of illness (doctor's notes) for the fall 2020 or winter 2021 semesters.
