COMP 6461

Computer Networks & Protocols

Winter 2023

Dr. Abdelhak Bentaleb

Getting to Know Me

Dr. Abdelhak Bentaleb

Assistant Professor

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What is COMP6461 About?

Lectures

- Discussion of **concepts** and **principles** behind computer networking
  - Using the Internet as a case study
  - A top-down approach

Labs

- Introduction to networked application programming
  - Programming with Python, JavaScript, and others.

Learning Outcomes

At the end of this course, students will be able to:

- Clearly explain the major components of a computer network and the Internet
- Explain the functions and protocols involved in the different layers of the OSI model and the TCP/IP stack
- Describe the operation of networking protocols and perform basic performance analysis
- Develop network-based applications and networking protocols
- Identify recent advances in modern networking, mobile networks, and security

What You Will NOT Learn in COMP6461?

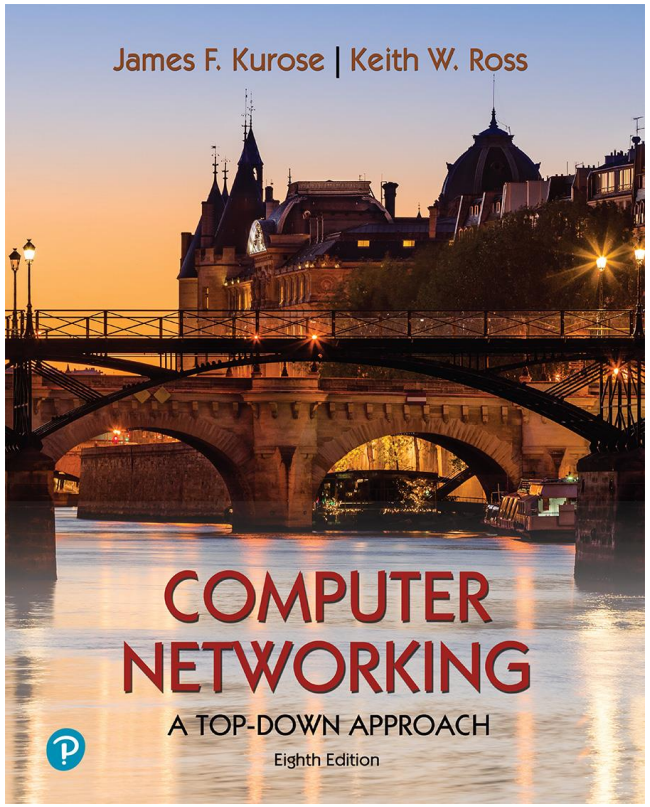
- How to configure hardware (PHY Layer), *e.g.,* routers
  - Covered in COEN 366 Communication Networks and Protocols - perform hands-on experiments in subnetting, DHCP, DNS, RIP, OSPF, TCP handshaking and congestion mechanism

- Mobile and wireless networking (in detail)
  - Covered in COMP 7251 Mobile Computing and Wireless Networks

Textbook

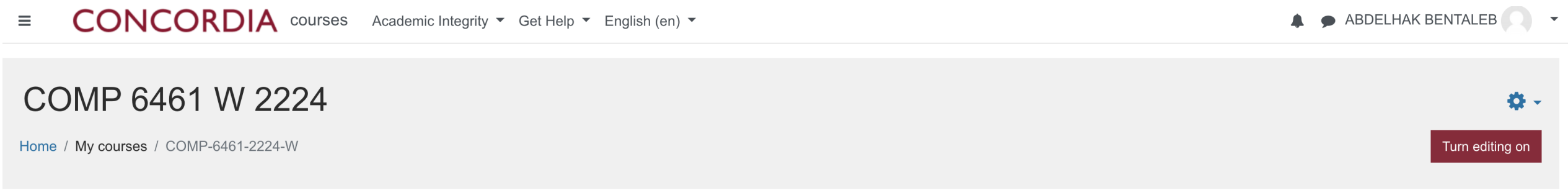
Computer Networking: A Top-Down Approach

8th edition *(7th edition is okay)*
Jim Kurose, Keith Ross
Pearson, 2020



Acknowledgement:
Most of the lecture slides are adopted from slides of this textbook.

COMP6461 on Moodle



Lectures Timeline (Rough)

Week	Topic
1	Course Outline + Intro to Networking
2	Intro to Networking + Application Layer
3	Application Layer
4	Application Layer + Transport Layer
5	Transport Layer
6	Transport Layer + Recap
7	Midterm + Networking Layer "Data Plane"
8	Networking Layer "Data Plane" + "Control Plane"

Week	Topic
9	Networking Layer "Control Plane"
10	Networking Layer "Control Plane" + Link Layer
11	Link Layer
12	Link Layer + Wireless Networks
13	Wireless Networks + Security

Course Hours

Lectures

- Every Tuesday 2:45 pm - 5:30 pm @ H 420 SGW
- 2:30 hours per session
- Week 7 (February 21st, 2023) is reserved for midterm test

Labs (Start from Week 3, start from 23rd January)

- 2 Labs: [TA and Day might be changed, please check Moodle for any update]
  - Every Thursday 6:10 pm - 8:10 pm @ H 907 SGW (Instructor: Alexis Yanez alexis.yanez@concordia.ca)
  - Every Thursday 6:10 pm - 8:10 pm @ H 967 SGW (Instructor: Y A Joarder yajoarder@gmail.com)
- 2 hours per session

Consultations

- Office hours: Wednesday 10AM – 11AM
- Email me to make arrangement (abdelhak.comp6461@gmail.com)

Course Assessments

Continuous Assessments (50%)

- Four Theoretical assignments: 10% (2.5% each; randomly pick a question and mark it)
- Three individual (or group of two maximum) programming lab assignments: 20% (a demo for each is required)
- Midterm test (February 28th, 2023): 20%

Final Exam (50%)

- Final exam's date be announced late

Course Conditions

- A lab session of 2 hours per week
- Three lab assignments. Must pass 2 out of 3
- Lab assignments include a mandatory demo
- Failing to present the demo reduces marks
  - 50% mark if students do not show up the first time
  - Zero marks if students do not show up the second time
- Four theoretical assignments.
- Theoretical assignments' full marks are obtained if a selected (random) question is correct and the student submitted a complete assignment on time.
- Late assignments will not be accepted
- Mid-term and final are closed-book examinations
- There is no substitution for a missed exam

This is a summary. For the full description of conditions, please check the official course outline in Moodle

Course Rules

- Collaboration among students is permitted for assignments indicated in groups.
- While discussion among students of the theoretical assignments is encouraged, each student is to solve and submit the assignments independently.
- In case of online examinations, students may be called for a follow-up oral exam afterward.
- Seeking help to solve a lab, a theoretical assignment, or an exam is not permitted unless the help is provided by the teaching team or by material indicated by the instructors.
- Providing help to other students in violation to these rules, is also a violation of the rules.

Important Deadlines (Updated)

- Theoretical assignment 1 January 27th, 2023
- Theoretical assignment 2 February 17th, 2023
- Theoretical assignment 3 March 17th, 2023
- Theoretical assignment 4 April 7th, 2023
- Lab assignment 1 February 10th, 2023
- Lab assignment 2 March 24th, 2023
- Lab assignment 3 April 14th, 2023
- Midterm February 21st, 2023 starting at 2:45 PM
- Final exam's date be announced later

Notes and Tips

Why COMP6461 can be **easy**

- You use and interact with the Internet constantly
- Many of the concepts are intuitive and based on very practical design principles
- There are very few equations!

Why COMP6461 can be **though**

- Many concepts are covered
- Programming!

I am Hiring

I am actively looking for motivated **Undergraduate**, **Master** and **PhD** students to join my group **in ML-enabled Networking and Multimedia Systems**

If you are interested (or you know someone interested), please discuss it with me and

send me your resume, degree(s), transcripts, and 2 pages motivation letter to:

abdelhak.bentaleb@concordia.ca

Let us work on cutting-edge research problems that Industry are facing currently
and build amazing systems ☺

New Amazing Course (Fall 2023)

COMP 691:

Artificial Intelligence for Computer Networks