

***This lecture will be recorded!***

Welcome to

**CS 3516:**  
*Computer Networks*

Prof. Yanhua Li

Time: 9:00am –9:50am M, T, R, and F

Zoom Lectures

Fall 2020 A-term

Class webpage: <http://users.wpi.edu/~yli15/courses/CS3516Fall20A/>

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This course will be offered mainly by synchronous Zoom lectures.  
Each lecture will be recorded and posted on Canvas as well.

Today:

1. Course Logistics

2. Introduction of Computer Networks

# Road map

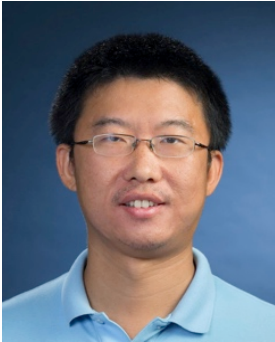
- 1. Class Staff
  - 2. Class Information
  - 3. Class Composition
  - 4. Official Communications
-

# Road map

- 1. Class Staff
  - 2. Class Information
    - Arrangement for COVID-19
  - 3. Class Composition
  - 4. Official Communications
-



# Who am I?



**Yanhua Li**, PhD  
Assistant Professor  
Computer Science & Data Science

PhD, Computer Science, U of Minnesota, 2013  
PhD, Electrical Engineering, BUPT, 2009

*Research Interests:* Wireless networking, Network Measurement, Big data analytics, Smart Cities

Industrial Experience: Bell Labs, Microsoft Research

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<https://users.wpi.edu/~yli15/index.html>

**Menghai: CS TA Award 2018-19!**



**Huimin: DS TA Award 2018-19!**





# Teaching Assistants

- **TA: Pan, Menghai (CS TA Award 2018-19!)**
- **Email:** mpan@wpi.edu
- **Office Hours:** 1PM – 2:30PM on Tuesdays
- Wednesdays, and Thursdays



- **TA: Peresa, Heshan**
- **Email:** haperera@wpi.edu
- **Office Hours:**
- 12:30-2:00PM on Mondays
- 9:30-11AM on Wednesdays
- 1-2:30PM on Fridays



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- TA office hours all via Zoom (**links available on Canvas**)

# Class Calendar & Office Hours

	Mondays	Tuesdays	Wednesdays	Thursdays	Fridays
9-9:50am	Lecture Zoom	Lecture Zoom	TA: Heshan Zoom	Lecture Zoom	Lecture Zoom
10-10:30am	Prof. Li, Zoom	Prof. Li, Zoom	Zoom 9:30-11am	Prof. Li, Zoom	Prof. Li, Zoom
	TA: Heshan Zoom 12:30-2pm	TA: Menghai Zoom 1-2:30pm	TA: Menghai Zoom 1-2:30pm	TA: Menghai Zoom 1-2:30pm	TA: Heshan Zoom 1-2:30pm

Office hours for all questions, e.g., project/lab assignment related questions, like programming...

Office hours for lecture related questions, and general questions for labs and projects.

# Class Etiquette

**State your name** when you:

- **ask** a question OR
  - **answer** a question OR
  - make a **comment**
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# Class Information

- ❖ Class Website :

- ❖ <http://users.wpi.edu/~yli15/courses/CS3516Fall20A/>

- ❖ Announcement Page

- ❖ Check Canvas announcement web page periodically
  - ❖ [canvas.wpi.edu](https://canvas.wpi.edu)

# Class Information

## ❖ Arrangement for COVID-19:

### ❖ Classroom AK219

<i>Room</i>	<i>Square Feet</i>	<i>Current Seats</i>	<i>Seating Type</i>	<i>SF/Seat</i>	<i>Calculated 6' separation</i>
AK219	1387	86	Moveable	16.1	27

### ❖ Enrollment

	<b>Maximum</b>	<b>Actual</b>	<b>Remaining</b>
<b>Enrollment:</b>	86	90	-4

### ❖ Hybrid Arrangement:

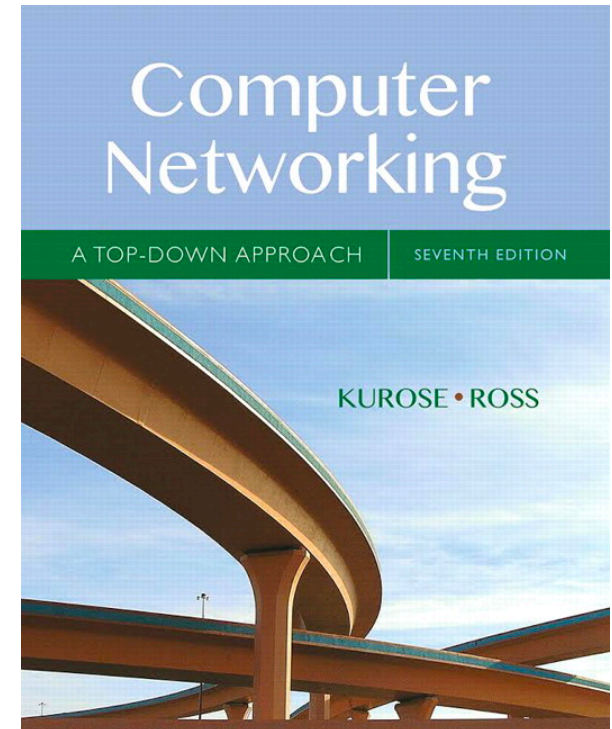
- ❖ All lectures: Online (Zoom)
- ❖ Professor and TA Office hours: Online (Zoom)
- ❖ Two exam Q&A optional sessions: In-person (AK219) + pre-recorded videos

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- ❖ Week 5 (9/17 T) and Week 8 (10/8 T).
  - ❖ Answer your questions in the two sessions.



# Textbook

- **Computer Networking - A Top-Down Approach (7th edition)**, by James F. Kurose and Keith W. Ross, Pearson, 2016.
- ISBN-10: 0133594149



# Why learn about computer networks?

- More and more applications need connectivity
    - Social Media, Internet of Things,
  - More and more are connected devices
    - Connected Vehicles, Smart Devices
  - **You may know how to use them, but do you understand how they work?**
  - A basic understanding of networking is fundamental for building next-generation systems
  - This is what the world is heading!!!!
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# Course Objectives

- **UNDERSTAND HOW THE INTERNET WORKS**
    - Building a broad understanding of the **principal protocols** used in computer networks such as HTTP, DNS, TCP, IP, etc.
    - Expose standard network terminology
    - Programming:
      - TCP/IP network socket programming
    - Recommended background:
      - Programming: CS2301, CS2303,
      - OS: CS3013
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# Course Progression

- Week 1-2: Overview
  - Week 2-4: Application Layer Protocols
    - P2P, HTTP, SMTP, DNS
  - Week 4-5: Transport Layer Protocols
    - UDP and TCP
  - Week 6: IP, Routing Protocols
  - Week 7: Link Layer Protocols, Wireless and Data Center Networking
  - Lecture slides and videos will be posted on the class website and Canvas after each lecture.
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# Course Composition

- Lectures
  - Quizzes
  - Programming Projects
  - Labs
  - Exams
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# 1. Lectures

- **Sampling** of important concepts / topics will be covered in class
  - The topics to be covered can be found on the **reading list** on the **course website**.
    - <https://users.wpi.edu/~yli15/courses/CS3516Fall20A/index.html>
  - Students are expected to have read the sections to be discussed in a class
  - **BUY/RENT/BORROW the textbook**
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- A **class is to be interactive** experience

## 2. Quizzes

- **8-10 Quizzes**
    - the quiz with the lowest score will be dropped
  - First Quiz: **Thursday (Sep 3rd)**
  - 2 - 3 Short Questions
  - First 15 minutes (9-9:15AM) in a Zoom lecture
  - **Quizzes will be on Canvas, and automatically starts at 9am and ends on 9:15AM; Please sign in Zoom while doing your Quizzes, so you can ask me questions in Zoom Chatbox.**
  - On quiz days, if you come **late** to class you will have less time to finish the quiz
  - If you show up after 15 minutes --- you get a **ZERO** in that quiz.
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- **Quiz topics** will be announced at least a day before the quiz (by email and Canvas announcements)



# 3. Course Projects

- **3 Programming Projects** in the class
    - Projects designed to give you a deeper understanding of various aspects of networking
  - Students **need very good C and systems programming** background
  - Code must run on WPI linux servers (more information on class website)  
<https://users.wpi.edu/~yli15/courses/CS3516Fall20A/BestPaper.html>
  - A willingness to request help when needed
  - **All projects are to be done INDIVIDUALLY**
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## 4. Class Labs

- **3 lab assignments**
  - Hands-on experience with protocols learned in class
  - Based on using the Wireshark packet sniffer
    - Will require everyone to download and install Wireshark (<http://wireshark.org>)
  - **All Labs are to be done INDIVIDUALLY**
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## 5. Exams

- **1 mid-term and 1 final exam** in the class
  - Will include all the topics covered until that point in class
  - **Each exam will be held in a 50 min class Zoom session.**
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# Workload and Grading

## ❖ Grading

- ❖ 90+ A, 80+ B, 70+ C, 70- D,

## ❖ Workload

- 30% - 8-10 Quizzes (drop the one w/ the lowest score)
- 30% - 3 Projects
- 15% - Mid-Term Exam
- 15% - Final Exam
- 10% - 3 Lab assignments

**EVERYTHING HAS TO BE DONE  
INDIVIDUALLY**

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# Official Communication

- **Official course communication**

- In-class discussion,
- Quizzes/exams
- Emails,
- Piazza/CANVAS discussion board, and the course Web pages
- Office Hours

- **All emails:**

- **subject line starting with [CS3516].**

- **Response Time:** up to **24 hours**.

(Emails sent on a Friday may be answered by the following Monday.)

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# Course Management System

- We will use **Canvas** for the course.
    - <https://canvas.wpi.edu/>
  - Will be used for:
    - Project & Lab submissions
    - Viewing feedbacks on submissions
      - Grading scores and feedbacks are updated Canvas system,
    - Viewing grades
  - If you have questions, please email me or the TAs and we can assist you
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# Late Submissions

- Projects and Labs are due online at **11:59pm** on the due date, unless otherwise noted.
  - Late assignments of projects and labs will be accepted up to one day (24 hours, with the weekend counting as one day) late.
  - **Any late assignment will be penalized 10%** of total assignment value.
  - Submission later than 24 hours after the deadline will **not** be accepted.
  - Makeup for **exams, projects and labs** will be allowed only in extenuating circumstances at the discretion of the instructor.
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# Academic Honesty

## – The WPI Academic Honesty Policy

- <https://www.wpi.edu/about/policies/academic-integrity>
- describes types of academic dishonesty and requirements in documentation.

## – In the case of academic dishonesty,

- Report the incident to the *Dean of Student Affairs*.

- **Penalty:** an **NR grade**.
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*Questions?*