

## CS 664, Computer Networks, Summer, 2024

- Instructor: Maha Lakshmi Yarlagadda
- Department: School of Computing
- Office Location: JB244
- Email: mxyarlagadda@shockers.wichita.edu
- Preferred Method of Contact: Email
- Office Hours: 09:45 AM – 10:45 AM Monday, Wednesday
- Classroom Day/Time: Wallace Hall 310/ Monday, Wednesday and Friday 11:00 AM-12:15 PM
- Prerequisites: CS 311, and IME 254
- Teaching Assistant: None
- TA Contact: None
- TA Office Hour: None

### Academic Honesty<sup>3</sup>

Any evidence of academic dishonesty (or plagiarism), including copying or dissemination of homework (from other students or from Online sources), copying or dissemination of programming assignments and cheating during exams/quizzes, will be treated with utmost seriousness. **First offense will result in a zero on the assignment/project/exam in question. Those who are involved the second time will automatically receive an F grade for the course; this applies to ALL the parties involved (including the ones who help/show). Any assignment with an 85% or more on SafeAssign WILL NOT be graded and given a ZERO.** It is your responsibility to protect your computer files (by setting appropriate access protection) and printouts. Students are responsible for knowing and following the Student Code of Conduct [http://webs.wichita.edu/inaudit/ch8\\_05.htm](http://webs.wichita.edu/inaudit/ch8_05.htm) and the Student Academic Honesty policy [http://webs.wichita.edu/inaudit/ch2\\_17.htm](http://webs.wichita.edu/inaudit/ch2_17.htm). The University Academic Honesty Policy can also be found in the WSU Student Handbook.

### What is allowed?

- Discussions with classmates/TA on possible approaches/directions for solving homework problems
- All homework should be completed (and written) individually

### What is not allowed (and would be considered as dishonesty/plagiarism/cheating)?

- Copying (verbatim or by slightly modifying) homework, project code, project reports, or any other course-related submission from other students.
- Disseminating or sharing one's own homework solutions, project code or other course submission material with others. Please protect (both physical and digitally) your submissions/code. You will be held responsible even if your

homework or project code is copied without your consent.

- Referring to online/Internet sources or textbook solution guides for completing homework. If you must use some code available online for your project, you must clearly cite or acknowledge the original author of the code (This may result in grading penalties; check with the instructor before using someone else's code).

### Course Description

The first course on computer networking. It includes : Basics of computer networking, various protocols, socket programming etc.

Credit hours: 3

### Definition of a Credit Hour

Success in this 3 credit hour course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction and preparation/studying or course related activities for a total of 135 hours.

Go to:

<http://webs.wichita.edu/?u=academicaffairs&p=/definitionandassignmentofcredithours/> for the policy and examples for different types of courses and credit hour offerings.

### Measurable Student Learning Outcomes: Undergraduate level

After passing this course, students will be able to:

- 1) Describe the functionality of networking protocols such as TCP, ICMP, IP and routing protocols.
- 2) Analyze the efficiency of networking protocols by applying concepts from probability theory and statistics.
- 3) Understand algorithms and computer programs to implement the functionality of the networking protocols.
- 4) Understand programs using state-of-the-art network and socket programming APIs.

### Required Texts

**Computer Networking: a Top-Down Approach (8<sup>th</sup> ed.)**

J.F. Kurose, K.W. Ross, Pearson, 2020

### Other Equipment/Materials (Suggested)

Online students are required to have complete access to a functioning laptop or PC with internet capabilities. This laptop or computer must have Microsoft Word. If you do not have Microsoft Word on your PC or Laptop, Wichita State does provide free access to Microsoft Office 365 for students. Follow the instructions below to get Microsoft Office:

1. Log in to MyWSU
2. Click on Office 365 located on the "Home" tab
3. Follow the Office 365 wizard instructions

Before you begin your coursework, ensure that your computer meets technical standards (software, computer equipment, general skills, program management skills, communication skills, and managing your WSU e-mail) for use in online courses.

## Class Protocol

- Students are expected to act and communicate professionally. This is expected of anyone entering the professional workforce and is expected in this course.
- Students need to have a desktop/laptop with a good internet connection
- Lectures will be delivered in-person and attendance will be noted.
- **Each assignment will be checked for plagiarism. The first offense of plagiarism will result in a 'zero' for the assignment/project; the second offense will result in an F for the course.**
- You are responsible to check your school-registered emails at least once a day. All material and assignments will be posted on Blackboard and in addition, I may contact you about the homework, quizzes, and exams through your email. Make sure you are able to receive emails and your mailbox is not full.
- Any grades posted on Blackboard are only a copy of the official grades which are kept on a private spreadsheet. There may occasionally be a difference which if brought to my attention, I am willing to explain and/or correct.
- The COVID-19 pandemic is a complex, challenging, and fluid situation, which continues to evolve rapidly. Therefore, students consistently should review the link for the WSU COVID-19 Response for information throughout the semester. WSU will follow federal, state, and county public health recommendations and mandates in all decisions related to university operations. Our priority is the health, safety and well-being of our entire campus community. To mitigate the spread of COVID-19, students are expected to follow university guidelines for wearing their own face coverings (such as a bandana, scarf or other cloth mask) when on campus, unless walking alone outdoors or working alone in a personal office space. Students additionally are expected to follow physical or social distancing guidelines by keeping at least 6 feet from others, covering their coughs and practicing good hand hygiene.
- Read academic resources, disability services, and COVID-19 updates:  
<https://www.wichita.edu/faculty/development/syllabuspolicies.php>

## Contact Policy

Although you may attempt to reach me by phone, email communication is always preferred. Feel free to email me any questions or concerns following these guidelines:

- Always use the course name in the subject line of the email
- Remember to sign your name.
- Always email me from your WSU email address. Email sent from personal email servers like Gmail, Yahoo, etc., have a tendency to end up in my spam folder, and I never see them. You may also email me through Blackboard via the Email My Instructor tab. I also offer an Ask My Instructor forum on Blackboard which allows common questions to be seen and responded to publicly. I will respond all your questions within 48 working hours.
- You should NOT contact me for tech support.
  - Any technical problems involving your computer, or issues regarding file uploading or sharing, should go through OneStop. You can contact them at 316-978-3909. You can also fill out a request for help form at their website.
  - However, if you have a problem with accessing or uploading assignments, you should let me know before your assignment is due. You will also have to accompany this notification with the file in

question, so I can verify that it is completed by the due date/time.

### Grading Scale

WSU uses a +/- grading scale for final grades and to calculate grade point averages. In this class, grades are assigned according to the following chart. (*Note: the chart below is a sample that may be used*). (Other classes might assign grades differently: Be sure to understand the different grading scales in all of your classes.)

Percentage obtained	Letter grade
$\geq 90$	A
$\geq 85$ and $< 90$	A-
$\geq 80$ and $< 85$	B+
$\geq 75$ and $< 80$	B
$\geq 70$ and $< 75$	B-
$\geq 65$ and $< 70$	C+
$\geq 60$ and $< 65$	C
$\geq 50$ and $< 60$	C-
$\geq 40$ and $< 50$	D
$< 40$	F

The evaluation of your work is my professional judgment and is not subject to negotiation. Incomplete "I" will not be given out, except under very special circumstances (e.g., illness, serious accident, death in family, natural disaster, etc.). You will be asked to produce evidence of these circumstances. An incomplete for a course must be removed by the end of the next semester or it will change to F.

### Grading Policy

Your letter grade will be based on the following components:

Homework Assignments – 20%

Quiz 1 – 10%

Quiz 2 – 10%

Exam 1 – 30%

Exam 2 – 30%

### Course Announcements and Updates

All course-related announcements will be posted only on the Blackboard course page. Students are expected to, and are responsible for, regularly monitoring the Blackboard page for course-related updates and announcements. Please enable the e-mail feature of Blackboard in order to receive e-mail updates whenever new content/announcement is posted.

### Homework Assignments

There will be a total of 4 homework assignments throughout the course. All homework assignments must be completed individually. Homework must be submitted on Blackboard as a single PDF file.

**No Late Submissions:** Assignments must be submitted on time, and late submissions are not accepted. This policy encourages students to manage their time effectively and prioritize their work.

**High Point Weightage:** Homework assignments carry a significant portion of the overall grade, emphasizing their

importance in the learning process. Each homework assignment will carry a weight of 5% of the overall grade.

**Zero Tolerance for Plagiarism:** Any form of plagiarism is strictly prohibited. Plagiarized assignments could result in severe penalties, including zero credit for the assignment or further academic consequences.

### **Late Assignments**

All assignments are due as indicated on Blackboard. Late assignments will **NOT** be graded unless the student has prior permission from the instructor. Please send an email to the GTAs and CC your instructor if you know that you are in danger of missing an assignment no later than 5pm on the day of submission. Documentation of the reason for missing may be required by the instructor.

### **Missed Exams**

A student is allowed to make up the missed exam, quiz, or presentation. Documentation of reason may be required by instructor.

### **Syllabus Policies and Student Resources**

All students should familiarize themselves with the course-related policies and student resources that can be found at: <https://www.wichita.edu/syllabuspolicies>

These include, but may not be limited to:

- COVID-19 conditions
- Important Academic Dates
- Academic Integrity
- Definition of a credit hour
- Video and Audio recording
- Shocker Alert System
- Intellectual Property
- CARE Team
- Counseling and Prevention Services
- Student Health Services
- Heskett Center and Campus Recreation
- Inclusive Excellence and Respect for Diversity
- First Generation Students
- Names and Pronouns
- Students with Disabilities
- Title IX
- Concealed Carry Policy

### **Disabilities**

If you have a physical, psychiatric/emotional, or learning disability that may impact on your ability to carry out assigned coursework, I encourage you to contact the Office of Disability Services (DS).

The office is located in Grace Wilkie, room 203, (316) 978-3309 (voice/tty) (316-854-3032 videophone). DS will review your concerns and determine, with you, what academic accommodations are necessary and appropriate for you. All information and documentation of your disability is confidential and will not be released by DS without your written permission.

### **Counseling & Testing**

The WSU Counseling & Testing Center provides professional counseling services

to students, faculty and staff; administers tests and offers test preparation workshops; and presents programs on topics promoting personal and professional growth. Services are low cost and confidential. They are located in room 320 of Grace Wilkie Hall, and their phone number is (316) 978-3440. The Counseling & Testing Center is open on all days that the University is officially open. If you have a mental health emergency during the times that the Counseling & Testing Center is not open, please call COMCARE Crisis Services at (316) 660-7500.

### **Diversity and Inclusive**

Wichita State University is committed to being an inclusive campus that reflects the evolving diversity of society. To further this goal, WSU does not discriminate in its programs and activities on the basis of race, religion, color, national origin, gender, age, sexual orientation, gender identity, gender expression, marital status, political affiliation, status as a veteran, genetic information or disability. The following person has been designated to handle inquiries regarding nondiscrimination policies: Executive Director, Office of Equal Opportunity, Wichita State University, 1845 Fairmount, Wichita KS 67260-0138; telephone (316) 978-3186.

### **Intellectual Property**

Wichita State University students are subject to Board of Regents and University policies (see [http://webs.wichita.edu/inaudit/ch9\\_10.htm](http://webs.wichita.edu/inaudit/ch9_10.htm)) regarding intellectual property rights. Any questions regarding these rights and any disputes that arise under these policies will be resolved by the President of the University, or the President's designee, and such decision will constitute the final decision.

### **Shocker Alert System**

Get the emergency information you need instantly and effortlessly! With the Shocker Alert System, we will contact you by email the moment there is an emergency or weather alert that affects the campus. Sign up at [www.wichita.edu/alert](http://www.wichita.edu/alert).

### **Student Health Services**

WSU's Student Health clinic is located in 209 Ahlberg Hall. Hours are 8:00am to 7:00pm (8:00 am to 5:00 pm on Fridays), though the clinic may be closed occasionally on Wednesdays from noon to 1:30pm. The telephone number is (316) 978-3620. In addition to outpatient and preventive care (including immunizations, a prescription service, and testing/counseling for sexually transmitted infections), Student Health can handle minor injuries. All services are confidential. For more information see : [www.wichita.edu/studenthealth](http://www.wichita.edu/studenthealth).

### **Title IX**

Title IX of the Educational Amendments of 1972 prohibits discrimination based on sex in any educational institution that receives federal funding. Wichita State University does not tolerate sex discrimination of any kind including: sexual misconduct; sexual harassment; relationship/sexual violence and stalking. These incidents may interfere with or limit an individual's ability to benefit from or participate in the University's educational programs or activities. Students are asked to immediately report incidents to the University Police Department, (316) 978- 3450 or the Title IX Coordinator (316) 978-5177. Students may also report incidents to an instructor, faculty or staff member, who are required by law to notify the Title IX Coordinator. If a student wishes to keep the information



confidential, the student may speak with staff members of the Counseling and Testing Center (316) 978-3440 or Student Health Services (316)978-3620. For more information about Title IX, go to: <http://www.wichita.edu/thisis/home/?u=titleixf>

### **The Heskett Center and Campus Recreation**

Whether you are wanting to be active on campus, relieve the stress from classes or take care of your body, Wichita State Campus Recreation is the place for you. Campus Recreation, located inside the Heskett Center, contributes to the health, education, and development of Wichita State University students, faculty, staff, alumni, and community members by offering quality programs and services. With many programs and facilities which are free to all students and members, Campus Recreation offers its members limitless opportunities. For more information about our services see [www.wichita.edu/heskett](http://www.wichita.edu/heskett).

### **Video and Audio Recording**

Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited. Unless explicit permission is obtained from the instructor, recordings of lectures, presentations or course material may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course.

### **CARE Team**

Wichita State University is committed to the safety and success of and cares about all members of the University community. If you or someone you know needs support, is distressed, or exhibits concerning behavior that is interfering with their own or others' academic or personal success or the safety of members of our community, resources and assistance are available. As your Faculty, I may seek support for you. If you or another member of our campus community is in need of help, please submit a concern at [www.wichita.edu/ubit](http://www.wichita.edu/ubit) or call any CARE team member listed on that webpage. In case of emergency, please call the University Police Department at (316) 978-3450 or 911.

### **Concealed Carry Policy**

The Kansas Legislature has legalized concealed carry on public university campuses. Guns must be out of view, concealed either on the body of the carrier, or backpack, purse or bag that remains under the immediate control of the carrier. Gun owners must familiarize themselves with WSU's Concealed Carry Policy at [http://webs.wichita.edu/?u=wsunews&p=/weapons\\_policy\\_documents](http://webs.wichita.edu/?u=wsunews&p=/weapons_policy_documents) and the Kansas Board of Regent's policy at [http://www.kansasregents.org/about/policies-by-laws-missions/board\\_policy\\_manual\\_2/chapter\\_ii\\_governance\\_state\\_universities\\_2/chapter\\_ii\\_full\\_text#weapons](http://www.kansasregents.org/about/policies-by-laws-missions/board_policy_manual_2/chapter_ii_governance_state_universities_2/chapter_ii_full_text#weapons).

If you believe that there has been a violation of this policy, please contact the University Police Department at 316 978-3450.

### **Additional Concealed Carry Language for lab courses or other courses where student belongings are unattended and out of immediate control (Suggested)**

Under the Concealed Carry Policy, a backpack or other bag used to carry a handgun must be within the immediate control of the individual. This course requires students to leave belongings such as backpacks or other bags out of reach

and unattended for the duration of class time. Students who choose to carry a concealed handgun in a backpack or other bag must plan each day accordingly, and are responsible for making alternate arrangements as necessary. Wichita State does not provide publicly available secure storage for concealed handguns. If you believe that there has been a violation of this policy, please contact the University Police Department at 316 978-3450.

### **Tentative Schedule**

A tentative schedule is posted to BlackBoard. This schedule may change during the semester and any changes will be posted to Blackboard and discussed in class.

Week number	Topics
1	Introduction to Computer Networks and Internet (Chapter 1)
2	Application Layer: Principles of Network Applications, HTTP, SMTP, DNS, P2P, Video Streaming and Content Distribution Networks and Socket Programming (Chapter 2)
3	Application Layer: Principles of Network Applications, HTTP, SMTP, DNS, P2P, Video Streaming and Content Distribution Networks and Socket Programming (Chapter 2)
4	Transport Layer: Introduction, Multiplexing and Demultiplexing, UDP, Principles of Reliable Data Transfer, TCP, Principles of Congestion Control, TCP Congestion Control, Evolution of Transport Layer Functionality (Chapter 3)
5	Transport Layer: Introduction, Multiplexing and Demultiplexing, UDP, Principles of Reliable Data Transfer, TCP, Principles of Congestion Control, TCP Congestion Control, Evolution of Transport Layer Functionality (Chapter 3)
6	Network Layer: The Data Plane: Overview, Switching fabrics, Buffers, Packet Scheduling, IPv4, NAT, IPv6, Generalized forwarding, Middleboxes (Chapter 4)
7	Network Layer: The Data Plane: Overview, Switching fabrics, Buffers, Packet Scheduling, IPv4, NAT, IPv6, Generalized forwarding, Middleboxes (Chapter 4)
8	Network Layer: The Control Plane: Introduction, Link-State and Distance-Vector routing algorithms, Intra-AS Routing (OSPF), Routing Among the ISPs (BGP) (Chapter 5)

**Tentative Dates for Midterm and Final** (This schedule may change during the semester and any changes will be posted to Blackboard and discussed in class.)

Quiz 1: June 24

Quiz 2: July 22

Exam 1: July 5

Exam 2: July 26