Syllabus for CSCE 5580 / Computer Networks

2024 Fall

When: Tu/Th 4:00PM ~ 5:20PM

Classroom: NTDP E266

Instructor: Tao Wang

Office: F245

Office Hours: Tu/Th 2:00PM ~ 4:00PM, or by e-mail appointment

Email: tao.wang2@unt.edu

TA: Zefeng He

Office Hours: TBA

Course Description:

The aim of this course is to introduce concepts in the design and implementation of computer networks and protocols. The emphasis of the course is on understanding the concepts and the engineering trade-offs involved in the design of the protocols. By end of the class, students are expected to improve understanding of the concepts, and several multi-week projects including design and implementation will be assigned. The goal is for the students to learn about computer networks, why they have been designed the way they are, and how they are going to evolve in the future.

Learning Objectives:

- Understand the need for layered architecture for the networking stack and learn about the different network stack models.
- Ability to understand the working of different application layer protocols, such as DNS, HTTP, FTP, and the P2P paradigm at the application layer.
- Understand the design decisions behind the TCP state diagram and be able to design and evaluate flow control and congestion control protocols.
- Ability to design and evaluate routing protocols by understanding the different routing paradigms, such as distance vector and link-state routing.
- Ability to understand and evaluate multiple-access protocols, such as Aloha, Slotted-Aloha, CSMA, CSMA/CD, and CSMA/CA.

Textbooks (RECOMMENDED):

- Computer Networking, A Top-Down Approach, 8th Edition, Jim Kurose and Keith Ross, Addison-Wesley.
- Unix Network Programming, Volume I: The Sockets Networking API, Third Edition, W. Richard Stevens, Addison-Wesley.

Tentative List of Topics:

Week0	Course Overview, Introductions
Week1	Service Model, Application Layer
Week2	Service Model, Application Layer Cont'd
Week3	Transport Layer (TCP, UDP)
Week4	Transport Layer Cont'd
Week5	Transport Layer Cont'd, Network Layer
Week6	Network Layer Cont'd, Midterm Review
Week7	Midterm
Week8	Network Layer Cont'd, Link Layer
Week9	Link Layer Cont'd
Week10	Wireless and Mobile Networks
Week11	Multimedia in Computer Networks
Week12	Security in Computer Networks
Week13	Presentation
Week14	Presentation, final review
Week15	Best of luck for the Final!

Every part of this syllabus is subject to adjustment as the semester progresses. Please contact me as soon as possible if you're dissatisfied with the course topics, policies, discussions, grading, etc. I'll be happy to accommodate reasonable requests for modifications

Evaluation Components:

- Homework Assignments (20%): To be completed individually (4-5 assignments).
- Quiz (10%): To be completed individually (5 online, 5 in-class).
- Programming Projects (15%).
- Class Participation (15%): Paper Summary, Presentation.
- Midterm (20%): Closed books and notes. Course covered till date.
- Final Exam (20%): Closed books and notes. Covers all material. Emphasis on the parts after the midterm.
No make-ups will be granted for the exams.

Course Policy:

Final Grading

- A = [90%, 100%]
- B = [80%, 90%)
- C = [70%-80%)
- D = [60%-70%)
- F = [0%-60%)

- Assignment Policy
  Each assignment will be uploaded to Canvas. The assignment can be theoretical and/or hands-on questions that may require writing some code or installing a software and running it, analyzing some data, etc. You will be uploading your answers through Canvas drop box. Submissions through emails or through comments, or through links will NOT be reviewed.
- Late Work
  Late submissions will result in losing 1 point per hour for the first two days only; after two days, the late submissions will not be accepted. The late submissions for the projects will never be accepted.
  For special circumstances (e.g., health) with the proper documents, contacting the professor in advance is suggested.
- Examination Policy
  The midterm and final exams will be closed-book/closed-notes exams. There will be no cheat-sheet, no books, no computers, etc. Other than emergencies (such as health), there will be no make-up exams, and, in case of a make-up exam, we will be discussing the policy and time individually case by case.
- Feedback
  The feedback (for the assignments, labs, midterm, etc.) will be provided within two weeks approximately. Please note that we have a large class and there can be some delays.
  The students can request for a review of their answers only within 10 days of grade announcements. Late requests may not be considered.
- Attendance Policy
  The student is responsible for regular and punctual attendance and is expected to participate in all courses in which the student is enrolled.
  Since we meet once a week, at every lecture we will cover multiple materials. Therefore, not attending the courses timely may result in missing materials. Please note that you are responsible of all the course materials whether you attend to the lecture or not. Please arrive on time to find a seat, prepare your materials, etc.
- Class Participation
  Class participation is highly suggested. Even though the attendance may not be directly involved in the grading policy, the discussions and examples throughout the semester may be a part of the exams. Correct participation may help you gain some bonus points. Nevertheless, disrespecting behavior in the class (e.g., noise, chatting, spending time on phone/computer) will not be accepted.

UNT Policies

- **Academic Integrity Policy**
  Academic Integrity Standards and Consequences: According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors **including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage**. A finding of **academic**

dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

Based on the Student Academic Integrity Policy (UNT Policy 6.003), any form of "unauthorized assistance" constitutes cheating.

If the use of artificial intelligence is not authorized for the assignment in question, the violation is "cheating".

All the students are expected to read: https://policy.unt.edu/policy/06-003

- **Course Evaluation**

  Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course.

- **ODA Policy**

  The University of North Texas makes reasonable academic accommodations for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website at http://www.unt.edu/oda. You may also contact ODA by phone at (940) 565-4323.

- **Emergency Notification & Procedures**

  UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.

- **Retention of Student Records**

  Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational

Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

- **Acceptable Student Behavior**

  Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT's Code of Student Conduct (https://deanofstudents.unt.edu/conduct) to learn more.

- **Access to Information - Eagle Connect**

  Students' access point for business and academic services at UNT is located at: my.unt.edu. All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail Eagle Connect (https://it.unt.edu/eagleconnect).

- **Student Evaluation Administration Dates**

  Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website (http://spot.unt.edu/) or email spot@unt.edu.

- **Sexual Assault Prevention**

  UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at

940-565- 2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.