

1 Course Information

Course Number: CSCE 463-500/612-600
Course Title: Networks and Distributed Processing
Time: TR 11:10-12:25pm
Location: 113 HRBB
Credit Hours: 3
Website: <http://irl.cse.tamu.edu/courses/463/>
Piazza: <http://piazza.com/tamu/fall2024/csce463>
Online Platform: Canvas

Instructor Details

Instructor: Dmitri Loguinov
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Office hours: TR 1-2pm

TA: Arif Arman
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Course Description

This class is an overview of computer networks with a focus on Internet protocols and high-performance coding in Windows.

Course Prerequisites

CSCE 315 (programming studio), CSCE 313 (computer systems), CSCE 312 (computer organization), CSCE 221 (data structures and algorithms), and most importantly **fluent knowledge of C/C++**.

Course Learning Outcomes

At the end of the semester, the students will obtain experience with protocol design, Internet operation, C/C++ network APIs, and multi-threading in Windows.

Textbook and/or Resource Materials

J.F. Kurose and K.W. Ross, "Computer Networking: A Top-Down Approach," Addison-Wesley, 6th edition, 2013.

Grading Policy

A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69%, F: 0-59%

Assignment	Qty	Format	Percent of final grade
Homework	4	Implementation and report	40% (10% each)
Midterms	3	Closed-book	45% (15% each)
Quizzes	3	Closed-book	15% (5% each)

Late Work Policy

Homework submissions are due at 10 am. Late homework is acceptable with a penalty of 20% of the full grade per day (no points after 5 days). Delays are rounded up to the nearest full day.

Example #1: your homework scores 76 points out of 100, but is 28 hours late. Your score is then reduced by 40 points and becomes 36. *Example #2:* your submission scores 19 out of 25 pts, but is 1 day late. The reduction is then 5 pts, which brings the grade down to 14.

Homework

All submissions must compile in Visual Studio 2022 in both debug and release mode. Solutions with missing files, incorrect project options, or dependency on non-standard libraries (e.g., boost) will not be graded.

Each homework must be accompanied by a written report (if there are multiple parts in the homework, the report applies only to the last part) describing your implementation and showing the performance analysis requested in the handout. Write in as much detail as possible, explain the various observations, and comment on the sanity of obtained results.

This course assumes *independent* work on each assignment. All submissions must be original and developed from scratch. At no time can you receive aid from external sources (e.g., current students, prior students, material found online, AI tools). The only exceptions to this policy are: sample code provided by the instructor on the course website, Microsoft help pages, and any interaction with the TA/instructor. **Academic dishonesty, including cheating and plagiarism, will result in an F* for the course and may lead to expulsion from the university.**

Course Schedule

The following schedule will be in effect:

Lecture #	Title	Topic
1	Preliminaries 1	Syllabus, Visual Studio
2	Preliminaries 2	Sockets, threads, synchronization
3	Introduction 1	Internet structure

4	Introduction 2	Delay and loss
5	Application layer 1	Application types, HTTP
6	Quiz 1	Chapter 1
7	Application layer 2	Caching, cookies, FTP, email
8	Application layer 3	DNS basics
9	Application layer 4	DNS vulnerabilities
10	Midterm 1	Chapters 1-2, homework #1
11	Application layer 5	Other DNS uses, P2P
12	Transport layer 1	Overview, multiplexing, UDP
13	Transport Layer 2	Reliable data transfer, stop & wait
14	Quiz 2	Chapter 2, parts of 3
15	Transport Layer 3	Go-back-N, Selective Repeat
16	Transport Layer 4	Timeouts, flow control, fast retx
17	Transport Layer 5	Congestion control
18	Midterm 2	Chapter 3, homework #2
19	Transport Layer 6	TCP modeling, fairness
20	Network Layer 1	Introduction
21	Network Layer 2	Switching, IP header
22	Quiz 3	Chapter 4
23	Network Layer 3	NAT, link-state routing
24	Network Layer 4	Distance vector, RIP, OSPF
25	Network Layer 5	BGP, multicast
26	Data-link Layer 1	Error detection/correction, CSMA
27	Data-link Layer 2	Ethernet, hubs/switches
28	Midterm 3	Chapters 4-5, homework #3-4

2 University Policies

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor” ([Student Rule 7, Section 7.4.1](#)).

“The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence” ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See [Student Rule 24](#).)

Academic Integrity Statement and Policy

“An Aggie does not lie, cheat or steal, or tolerate those who do.”

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case” ([Section 20.1.2.3, Student Rule 20](#)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu. Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are

Mandatory Reporters must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services \(CAPS\)](#).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.