

# CSCE 463/612: Networks and Distributed Processing

## Spring 2017 Syllabus

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### 1. Basics

Instructor: Dmitri Loguinov (dmitri@cse.tamu.edu, 979-845-0512)  
Class hours: TR 3:55-5:10pm in HRBB 113  
Office hours: TR 5:10-6:10pm in HRBB 515C (or by appointment)  
TA: Di Xiao (di@cse.tamu.edu)  
Book: J.F. Kurose and K.W. Ross, "Computer Networking: A Top-Down Approach," Addison-Wesley, 6<sup>th</sup> edition, 2012  
Website: <http://irl.cse.tamu.edu/courses/463/>  
Q&A forum: <http://piazza.com/tamu/spring2017/csce463>

### 2. Description

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

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++**.

Assignments: No outside help is allowed. Submit only results of your original work.

Team work: Prohibited.

Attendance: Not required during regular classes. For tests, you must notify the instructor *in advance* of any personal conflicts (e.g., conference travel) or otherwise provide evidence of a university-approved excuse. Makeup tests will be scheduled on a case-by-case basis.

Exams and Quizzes: Three midterms covering all assigned topics and three quizzes based on the problems at the end of each chapter. The final grade is computed as following:

**A: 80-100%, B: 70-79%, C: 60-69%, D: 50-59%, F: 0-49%**

Distribution of points:

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)

Homework: Due at noon; late homework is acceptable with a penalty of 20% of the original grade per day (no points after 5 days). *Example:* your homework scores 76 points, but is 2 days late. Your score is then reduced by 40 points and becomes 36. Each homework must be accom-

panied by a written report 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.

### 3. 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.

### 4. Schedule

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

### 5. Academic Honesty

This course assumes *independent* work on each assignment. You may not copy or submit *any part* of other students' work, material found in books or publications, or text from the Internet unless explicitly allowed by the instructor. If such submission is allowed, the copied parts must

be clearly marked and properly cited. If unsure, check with the instructor before submitting assignments. **Any academic dishonesty, including cheating and plagiarism, will result in an F\* for the course and may lead to expulsion from the university.**

For more information, see Academic Rule 20 at <http://student-rules.tamu.edu/>

#### AGGIE HONOR CODE:

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

"Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System."

## 6. Americans with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>.