Course Syllabus

ICCS 421 — Computer Networks and Distributed Processing (3 credits)

1 Basic Information

Instructor: Dr. Kanat Tangwongsan (`kanat.tan@mahidol.ac.th`)

Website: We're using MUIC Canvas

Prerequisite(s): ICCS 321 or instructor's permission

2 Course Description

Types of computer networks; network management; network mechanisms; packet switching; routing in the Internet; distributed processing and distributed databases.

3 Course Objectives and Goals

After completing this course, students should

(1) have a fundamental understanding of computer networks and the key factors in the development of computer networks, especially the Internet, and related technologies;

(2) understand different types of networks, their characteristics, and their working environment;

(3) become familiar with basic techniques and services that are used in building a distributed system.

4 Course Outline

Week 1: Course Overview; Protocol Stacks/Layering

Week 2: Sockets programming; Application Layer: Philosophy & Applications; Review of Physical/Link

Week 3: Ethernet, Switching; Bridging up to IP

Week 4: The IP Protocol; IP Routing; DNS and Content-Distribution Network (CDN)

Week 5: Routing (DV, OSPF); Mobile Networking

Week 6: Transport Protocols: UDP and TCP–Connection, Congestion Control, Flow Control; ** **Midterm**

Week 7: Anonymous Routing; Intro to Distributed System; Distributed Filesystems

Week 8: Remote Procedure Call; Time and Synchronization

Week 9: Consistent Hashing and Name-by-Hash; Load Balancing

Week 10: Distributed Replication

Week 11: Logging and Crash Recovery; Bonus Lecture

5 Evaluation

5.1 Grading Policy

(Small) Assignments & Labs	10%
Projects (≈ 4 projects)	30%
Midterm	25%
Final	30%
Participation & Quizzes	5%

5.2 Letter Grades

There is no exact formula for assigning grades, but per OAA's guidelines, we will use the following cutoffs:

90+	A	70 – 74	C
85 – 89	B+	65 – 69	D+
80 – 84	B	60 – 64	D
75 – 79	C+	0 – 60	F

5.3 Late Assignments

Assignments are due electronically at 11:59PM Bangkok time unless otherwise stated on the assignment. You are encouraged to hand them in well ahead of the deadline.

You are allotted **FIVE (4) late days for the term** at no grade penalty. At most **ONE (1) late day may be used per assignment**. If you have used up these five days or used more than two for a given assignment, your score will be reduced by 25% off of the total (not your score) per late day used. Except in extraordinary circumstances (e.g., a medical emergency), no late homework will be accepted beyond the late date.

5.4 Academic Integrity

Students are expected to maintain the highest standards of academic integrity. Academic dishonesty will *not* be tolerated and will be reported to the Academic Dishonesty committee.

6 References

James F. Kurose and Keith W. Ross, *Computer Networking: A Top-Down Approach*, Pearson.

Larry L. Peterson and Bruce S. Davie, *Computer Networks: A Systems Approach*, Morgan Kaufmann.

Andrew Tanenbaum and Maarten Van Steen, *Distributed Systems: Principles and Paradigms*, Prentice Hall.