

CIS 427 Computer Networks and Distributed Processing 4 Credit Hours, Winter, 2021

Contact Information:

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Course Description: This course studies the general principles and concepts of computer networks. The goal is to learn not only what computer networks are and how they work today, but also why they are designed the way they are and how they are likely to evolve in the future. Topics include network architectures (ISO/OSI, TCP/IP), encoding, framing, error detection and correction, reliable transmission, LAN technology and media access control, internetworking, routing, flow/congestion control, wireless and mobile networks, network security, and Internet of Things.

To accommodate to online learning, quizzes, homework assignments, and a team-based course project will be assigned for better understanding the core concepts of networking.

Prerequisites: CIS 350

Program Goals: <https://umdearborn.edu/cecs/departments/computer-and-information-science/undergraduate-programs/bs-computer-and-information-science/educational-objectives>

Course Objectives:

- Knowledge of general principals and concepts of computer networks.
- Knowledge of local area networking technologies, such as Ethernet, Token Rings, and Wireless LAN.
- Knowledge of wide area networking technologies (Packet-Switching and Routing).
- Knowledge of Internet protocols (IP, TCP, and UDP).
- The ability to design basic networking services with socket programming

Required Materials and/or Technology:

Required Textbook:

Computer Networks: A Systems Approach, Peterson and Davie (5thEdition). Morgan Kaufmann.
Computer Networking: A Top-Down Approach (7thEdition), Kurose & Ross, Pearson Addison Wesley

Assignments and Grading Distributions:

Class Participation (Canvas Discussion, Zoom Meetings)	5%
Quizzes	10%
5 Homework Assignments (lowest grade dropped)	20%
Mid-term Exam	25%
Term Project	35%

[97%- 100%]	A+	[90%- 97%)	A	[87%- 90%)	A-
[83%- 87%)	B+	[80%- 83%)	B	[77%- 80%)	B-
[73%- 77%)	C+	[70%-73%)	C	[67%- 70%)	C-
[63%- 67%)	D+	[60%-63%)	D	(0 – 60%)	F

Tentative Course Outline and Schedule:

Date or Week	Topic	Lab	Assignments
Week 0	Course Introduction	HTTP Server & Wireshark	Lab 1
Week 1	Computer Network Overview		
Week 2	Application Layer	Socket	HW1/Lab 2
Week 3	Link Layer 1	Web Socket	
Week 4	Link Layer 2	Ethernet Msg	HW 2

Week 5	Network Layer 1	Port forwarding	Lab 3
Week 6	Network Layer 2		HW 3/
Week 7	Transport Layer 1	coAP/MQTT	
Week 8	Transport Layer 2	Smart Lock System & Design	HW 4/Lab 4
Week 9	Security	HW1/2/3/4 Review	
Week 10	Mid-Term Exam		HW 5/ Presentation
Week 11	Mobile/Wireless	TLS (Guest Lecture)	
Week 12	Distributed Computing	RPC	
Week 13	Final Presentation		

Note: the assignments column denotes the week that each assignment is released. Unless announced otherwise, all assignments will be due by the day the next assignment is released.

Course and University Policies:

Instructor or Course Specific Policies:

- Late submission policy: Homework/Course Project must be submitted by 11:59 pm on the day that the homework is due. Late submissions will be accepted until the next day at 11:59 pm, with a 10% penalty (hard deadline). No late submission will be accepted after the hard deadline.
- Grade disputes and corrections: If you feel that an error has been made in grading an assignment or an exam, you must submit a written re-grade petition within one week

after the assignment or exam has been returned to you. Verbal appeals are not acceptable and grades will not be changed after the one-week period.

- Plagiarism: Although students are encouraged to help their classmates, students sharing code are guilty of plagiarism. If programs are considered too similar, the students will be asked to explain. In all cases of cheating, students who supply code or take it will both be penalized. The minimum penalty for all students involved in cheating is a failure on the assignment. The assignments in this class are for student use only. You are not allowed to post any assignments on the Internet or share them with other students. Students who turn in questionable programs and homework assignments are subject to defend them orally to the professor without warning.
- Exams: There will be one open-book midterm exam. Unless prior arrangements are made, a grade of zero will be recorded for missed exams.

Food Pantry

The pantry exists to support individuals on their journey as they work toward achieving their goals. We are committed to increasing access to food as a key to success, by assisting any student in need! If you need access or have questions, please contact the Office of Student Life by phone at 313-593-5390, by email at umdearbornpantry@umich.edu.

University-Wide Policies or Statements Relevant to Courses:

Please see the 'Course Policies' Menu on Canvas for information on the following:

- University Attendance Policy
- Academic Integrity Policy
- Counseling
- Disabilities Services
- Safety Statement
- Harassment, Sexual Violence, Bias, and Discrimination