CS 455 Computer Communications and Networking

Fall 2025

Instructor: Dr. Wassim Itani
E-Mail: wassim@gmu.edu
Office Location: Buchanan Hall 217I
Office Hours: Monday 12:00 PM – 02:00 PM or by appointment
Prerequisites: - Grade C or better in CS 310, CS 367 and STAT 344
               - Ability to program in C or Python

Class Time & Location
Section 001: Monday and Wednesday 09:00 AM -10:15 AM MTB 1005 Fairfax
Piazza
Section 001 course link: https://piazza.com/gmu/fall2025/cs455001
Access code: itani_CS455_001
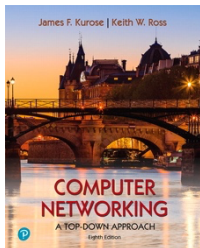
GTA
Fatema Tuz Zohra
fzohra@gmu.edu
Office hours: TBA

Important Note: You are expected to check your GMU Canvas on a daily basis for any announcements made for this class including but not limited to, announcements for homework, assignments, exams, etc.
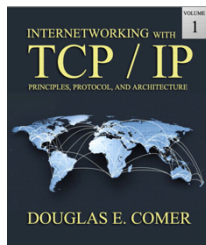
Course Information
Required Textbook(s)

Computer Networking, a top down approach, 8th (eighth) Edition, ISBN-13: 9780136681557 by James Kurose, Keith Ross, Pearson (2020)

Optional Textbook(s) or Other References

Internetworking with TCP_IP Volume One. Principles, Protocols, and Architecture, Sixth Edition, ISBN: 013608530X, Douglas E. Comer - Addison-Wesley (2013)

Instructor's Handouts

Computing Requirements
- Students are expected to have access to a Windows or Macintosh computer with at least 2 GB of RAM and to a fast, reliable broadband Internet connection (e.g., cable, DSL).
- Additional software requirements will be announced by the professor as needed.

Catalog Description
Data communications and networking protocols, with study organized to follow layers of Internet Protocol Suite (TCP/IP family of protocols). Topics include role of various media and software components, local and wide area network protocols, network performance, and emerging advanced commercial technologies

Course Outcomes:
- Describe the main design issues of transport protocols and the mechanisms used to control traffic flow and congestion and provide robust data delivery.
- Describe the TCP/IP protocol suite and its characteristics.
- Explain the rationale and workings of the different network layers: The Application Layer, the Transport Layer, the Network Layer, and the Data Link layer.
- Evaluate feasibility of LAN configurations and Medium Access Protocols
- Apply the concepts of layered TCP/IP architecture in understanding how packets are transmitted and received over the Internet.
- Describe the workings of the main Internet protocols such as HTTP, DNS, TCP, UDP, IP, ARP, and ICMP.
- Understand NATing and how it allows the communication among private IPs.

Course Grade:

Activity	Weight
Participation and Attendance (might include small activities).	10%
Homework Assignments (Optional and not Graded)	0%
4 Project Components	30%
Midterm Exam	25%
Final Exam	35%

The letter grade will be assigned according to the following scale:
    A+ >98
    A   92-98
    A- 90-92
    B+ 88-90
    B   82-88
    B- 80-82
    C+ 78-80
    C   72-78
    C- 70-72
    D   60-70
    F   <60

Homework Assignments
A set of 4 homework assignments will be provided over the semester. These assignments are optional and not graded. However, it is highly recommended that students solve these assignments in their entirety as they resemble questions to appear in the midterm and final exams. Statistically students solving the homework assignments and checking their answers help them earn a better course grade.

Project
A set of 4 programming project components will be assigned during the semester. Some components should be developed individually while others can be developed in a team. The full project details will be posted on Canvas. Late project submissions are NOT allowed. A submission is considered on time if submitted electronically on Canvas on or before required submission date/time. Late submissions of project components will be penalized at 15% each day, and will not be accepted after 2 days of the due date.

Exams
The course comprises a midterm and a final exam. There will be no makeup exams. Arrangements can be made in case of emergency, but the student needs to inform the professor in advance unless the emergency is unexpected.

Class Attendance and Classroom Policy
Class attendance and active participation is required. The student is strongly encouraged to ask questions during the lectures or using online using Piazza, and this is viewed as part of the class participation. If the student is absent from class, he or she is responsible for any materials covered, handouts and any announcements made in class, regarding (but not limited to) class schedule, assignments, project and exams. Cell phones must be turned off during class.

Collaboration Policy
All assignments and projects must be completed individually, if they are not assigned to teams. On individual assignments, the students MAY NOT work together. The students may ask each other for general advice, but they may not share final answers. Word to word copy from another student or from the work of previous years is considered cheating and "We did the homework together" is not an excuse.

Disability Accommodations

If you are a student with a disability and you need academic accommodations, please notify me and contact the Office of Disability Services (ODS) at 993-2474, http://ods.gmu.edu. All academic accommodations must be arranged through the ODS.

Honor Code Statement

Please be familiar with the GMU Honor Code. In addition, the CS department has its own Honor Code policies. Any deviation from this is considered an Honor Code violation. All graded work must be your own effort. Any attempts at cheating will not be tolerated and will be turned in to the Honor Committee with significant penalty recommended. The usual recommendation is grade of F in the course.

Tentative Course Outline:

Check your Canvas course page for the tentative course schedule

*Note: This syllabus is subject to change. Any changes will be announced. It is the student's responsibility to obtain the information on the changes applied.