Course: EEGR 410 – Introduction to Networks

Faculty Name: Dr. Cliston Cole

Term: Fall 2025

EEGR 410: Introduction to Networks

Electrical and Computer Engineering Department

COURSE SYLLABUS

Instructor:	Dr. Cliston Cole	Term:	Fall 2025
Office:	SEB 336	Class Meeting Times:	Monday 4:30 PM – 7:20 PM
Phone:	443.885.2356	Class Location:	SEB 202
E-Mail:	cliston.cole@morgan.edu	Website:	Canvas
Office Hours:	Mon/Tues.: 2:30 PM – 4:30 PM, SEB 336 Thurs. 2:00 PM – 4:00 PM, SEB 336 **Appointment only (24 hrs. advanced)**		

I. Welcome!

Comunications Networks

II. University Course Catalog Description

An introduction to communication networks. Includes the OSI layering model of networks with emphasis on the physical, data link, and network layers; and network topologies. Introduction to a variety of computer, satellite, and local-area communication networks, including Ethernet, and Internet.

III. Course Overview

This course will provide a basic introduction and advanced topics to of all aspects of communications networks including end to end connections, routing protocols and procedures, communications security, and network security,. The course is intended to be advanced, which requires knowledge based on calculus, linear algebra, probability, convex analysis, digital signal processing, and advanced linear programming. We will review publications with an emphasis to the complexity of communication networks of systems or agents under adversarial attacks. We will use optimization tools and linear programming to resist adversarial attacks and stabilize a communications network. The majority of our code will be in Python, but as this is an advanced course, we are going to investigate solutions written in several other languages as well, e.g. C/C++/C#. Students will be introduced to several cloud services via Google/Amazon/Microsoft for implementing projects and GitHub for software version control.

IV. Course Objectives / Student Learning Outcomes (SLOs)

This course provides students basic knowledge and skills in the fundamental theories and practices of Cyber Security. Upon completion of the course a student is expected to have met the following six (6) course objectives/ Learning Outcomes (LOs) listed below. These outcomes relate to the weekly objectives found in each module.

- LO1: identify and explain the fundamental concepts of protocols and examine protocol structures.
- LO2: examine/design a data communication link considering fundamental concepts of signals, medium, encoding, reliability and efficiency.
- LO3: identify key elements of Wide Area Networks, such as switching, routing, congestion, and QoS.
- LO4: architect a Local Area Networks considering the shared medium choices for high-speed LANs or Wireless LANs.
- LO5: understand and examine Internet and Transport Protocols and gain deep knowledge on Internetwork operations.
- LO6: identify the key aspects of internet applications such as network security, Email and network management, DNS and web servers and multimedia.

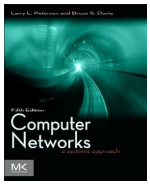
V. Course Prerequisites

Software Engineering or Computer Programming, Statistics and Probability, Calculus, Linear Algebra Digital Signal Processing and Intro to Cybersecurity

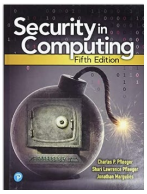
VI. Course Credits

3 credits; 3 class hours.

VII. Required Texts and Materials

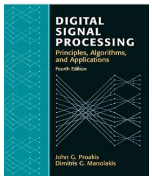


Petterson, L.L., Davie, B.S. Computer Networks: A System Approach 5th Edition, Morgan Kaufmann, Copyright 2011 ISBN 978-0123850591



Pfleeger, C.P., Security in Computing 5th Edition, Prentice Hall, Copyright 2010 ISBN 0-13-239077-9

VIII. Supplementary (Optional) Texts and Materials



Proakis, J., Manolakis, D., Digital Signal Processing: Principles, Algorithms and Applications 4th Edition 978-0131873742

http://www.cplusplus.com/doc/tutorial/
http://www.deeplearningbook.org/
https://www.anaconda.com/

IX. The basis for Final Grades

The final grade will be determined based on exams, assignments, quizzes, and a final project, as follows (Due to COVID-19 the percentages have been changed to reflect our current capabilities at this point in the semester):

Assessment	Percent of Final Grade
Exam I (Midterm)	30%
Exam II	30%
Quizzes	30%
Team Final Project	10%

Bonus	5%
	105%

X. Grade Dissemination

Grades for all exams, and projects will be published in Canvas.

XI. Course Policies: Grades

Late Work Policy: There are no make-ups for the midterm exam, individual projects, or team project. Late work submissions will need approval from faculty before the deadline.

Grades of Incomplete (INC): INC grades are at the discretion of the instructor and only given in very specific circumstances. An "INC" grade is given when the student is doing passing work during a semester and who for some justifiable reason has not been able to complete a particular assignment or misses a final exam. Check the College catalog for further information regarding INC grades.

XII. Course Policies: Technology and Media

Computers and other electronic devices can only be used to access lecture materials. Students are not to work on other materials in class.

Students are required to check email and canvas with regularity to check for class information and announcements.

XIII. Course Policies: Student Expectations

Attendance Policy: All students have the responsibility to arrive on time, attend class regularly, and to participate fully in the work of the course. Attendance will be taken in class, if you miss more than three classes without a properly documented excuse, your final grade will be in jeopardy. Students who miss class are responsible to find out what was discussed and learn the material that was covered on the missed day(s). The instructor is not responsible for teaching missed material under any circumstances.

Assigned readings, problems and programs should be completed before class. Several projects will be assigned to reinforce the concepts presented in class. Unless you own or have access to equivalent hardware and software, plan on spending a lot of time on campus

Honor Code and Plagiarism (Cheating): Students are required to sign and adhere to the departmental honor pledge. Check with the department for a copy of the pledge.

MIDTERM EXAM

The midterm exam will be in-person. Cell phones or any other electronic devices cannot be used during exams. Any form of cheating during a midterm will cause immediate removal from the exam and a grade of zero.

PROJECTS

Unless otherwise specified, projects are to be completed individually. Discussions with other people about how to solve the problem, strategies, or problems that might arise, are permitted. However, each person write his/her own programs independently.

Do not, under any circumstances, copy another person's work (this includes computer code). Incorporating someone else's code into your program in any form will be considered plagiarism and therefore a violation of academic regulations. You must be prepared to explain any work/code you submit. When a student is unable to explain the working of a piece of code that he/she submitted, no credit will be given for the homework. At the discretion of the professor, the action might be reported to the Department and the University.

Disability Access: Any student who may require accommodations due to a disability must be registered with the Office of Services for the Differently-Abled and notify the instructor at the start of the semester.

IEEE CODE OF ETHICS

The Department of Electrical and Computer Engineering has determined that is important for students to know and follow a code of ethics specific to the profession-The Institute of Electronic and Electrical Engineers (IEEE). The organization's code of ethics can be found using the following weblink:

https://www.ieee.org/about/corporate/governance/p7-8.html

ACADEMIC INTEGRITY

Morgan State University upholds Academic Integrity within the collegiate environment. It is the responsibility of both faculty and student to 'uphold intellectual honesty in the pursuit of knowledge', as noted in the following weblink:

https://www.morgan.edu/Documents/ADMINISTRATION/regents/docs/A-1%20Academic%20Integrity.pdf

ACADEMIC DISHONESTY POLICY

In addition, faculty at Morgan State University is responsible for promoting honest academic conduct among students and the Academic Dishonesty Policy is noted in the following weblink:

http://catalog.morgan.edu/content.php?catoid=3&navoid=188#policy-on-academic-dishonesty

MSU STUDENT CODE OF CONDUCT

Morgan State University has established a Code of Conduct that students must follow. The code of conduct in its entirety is provided on the following weblink:

https://www.morgan.edu/Documents/ACADEMICS/SCHOOLS/SCHP/Student%20Handbook%20%202019-2020%20(2).pdf

Students within the Department of Electrical and Computer Engineering are expected to have a high standard of behavior inside and outside of the classroom. Any student misconduct is subject to disciplinary actions. Prohibited conduct is noted below:

1. Disruptive, disorderly or reckless conduct
    a. Disruption in the Classroom: The primary responsibility for managing the teaching and learning environment rests with the instructor, which includes faculty, teaching assistants, laboratory assistants, librarians or any other person acting in a supervisory capacity over the instructional forum. Students who engage in unlawful or prohibited conduct in those forums which includes any behavior prohibited by the instructor (including but not limited to use of cellular phones, bringing unregistered persons to class, smoking, persistently speaking without being called upon, refusing to be seated, disrupting the class by leaving and entering without authorization, etc.), **may be directed by the instructor to leave the class for the remainder of the class period.** Depending on the severity and frequency of the conduct, the University may impose any other sanction available to it at law.
    b. Engaging in disorderly or disruptive conduct, which interferes with the activities of others.
    c. Stalking - means engaging in a course of conduct directed at a specific person that would cause a reasonable person to fear for his or her safety or the safety of others, or suffer substantial emotional distress.
    d. Abuse of any person; this includes verbal, written, electronic, or telephone abuse.
    e. Harassment of any person which is defined as unwelcome conduct (including written or electronic communication) directed at a specific person(s), which is so severe, pervasive or persistent that it interferes with or limits a person's ability to participate in, or benefit from the services, activities, or opportunities offered by the University.
2. False Information
    a. Intentionally furnishing or causing false information or a false report to be furnished to the University.
    b. Making, possessing, or using any forged, altered, or falsified instrument of identification.

XIV. Important Dates to Remember

Check the official academic calendar from the Office of the Registrar for special dates such as last day to add/drop classes, withdrawal deadline, closings, breaks, and examinations. Notice that the exam dates can be changed at the discretion of the professor.

XV. Schedule

The schedule, together with assignments, is subject to change in the progress of the course. Some topics might take longer than one week. Announcements made in the class and on the website/canvas/email override the schedule in case of conflicts.

Week	Date	Topics	Project/ Qizzes
1	9/1	No Class	
2	9/8	Introduction to the Course	Team Final Project: Due 12/08
3	9/15	Chapter 1 Foundation (LO1,LO2)	
4	9/22	Chapter 2: Getting Connected (LO1,LO2)	
5	9/29	Chapter 3: Internetworking (LO3, L04, LO5)	Quiz I
6	10/6	Midterm Review	
7	10/13	Midterm Exam: DSP & Chapters 1-3	
8	10/20	Chapter 5: End-to-End Protocols (LO3, L04, LO5)	
9	10/27	Chapter 6: Congestion Control and Resource Allocation (LO3, L04, LO5)	Quiz II
10	11/3	Chapter 7: End-to-End Data (LO3, L04, LO5)	
11	11/10	Chapter 8: Network Security (LO6)	
12	11/17	Chapter 9: Applications (LO6)	
13	11/24	Special Topic in Network Security: Cryptographic Systems Exam II Review	Quiz III
14	12/1	Exam II: Chapters 1-9	
15	12/8	Team Final Project Demo: TBD	