

CS 475 - Networks

Fall 2020 - Syllabus

Instructor

Mr. Mark Randall

KC-247, 488-2498, Randall@evansville.edu

Home page: <http://csserver.evansville.edu/~mr63>

Office Hours:

8 AM – 11 AM MW

1 PM – 3 PM TTH

Meetings by appointment only.

Appointments must be made 2 hours in advance, make appointments using:

<https://calendly.com/mr63/officehours>

I can be contacted by email anytime between 8:00 AM and 8:00 PM M-TH

I will respond to email and weekend but only on a limited basis and if I have time and resources to do so.

Catalog Data

Digital data communication systems in hardware and software, synchronous and asynchronous communication, standards, protocols, network configurations, network applications.

Course Objectives:

Successful students will be able to:

1. Use and understand terminology related to Networks and Networking.
2. Write network applications using the socket API.
3. Understand how an IP router uses a forwarding table.
4. Identify and explain the fields of an Ethernet frame.
5. Compute the length of a single bit as it propagates across a wire at the speed of light.
6. Explain why TCP is classified as end-to-end.

Prerequisites: CS 215, MATH 222

Required Textbook

Douglas E. Comer, *Computer Networks and Internets*, 6/e, 2015, Morgan Kaufmann Publishers, ISBN-13: 978-0-13-358793-7

Credit Hour Policy:

This Course meets the federal requirements of 15 in-class hours plus an expected 30 hours of out-of-class work per credit hour;

Daily Requirements

Daily reading assignments.

Programming Projects

There will be several (3) programming projects during the course of the semester. The projects will require that you develop a network application or simulate a network communication protocol. Unless otherwise indicated all programming projects must compile (without warnings) and run (without errors) on cserver.

Network Exploration Projects

There will be multiple (2-3) projects that require you to use Wireshark and other tools to explore and analyze network protocols.

Exams and Evaluation

There are two 1 hours exam. The final test will be during the final exam period. Final grades will be based on the following weighted distribution:

- 45% Written Exams (20% each)
- 25% Programming projects
- 20% Network exploration projects
- 10% Homework

Final grades are based on the final weighted percentage with adjustments depending on class distribution. The A/B line will be no higher than 90% with subsequent grade levels every 10%.

Late Homework and Projects

Late homework will not be accepted.

Projects are due at the instructor's office and/or electronically as appropriate by 8:00 am on the date specified unless otherwise noted. Any assignments arriving after 8:00 am are considered late. The following automatic late penalties will be applied:

- 10% if handed in by 8:00 am, up to 1 week late
- After 1 week late work will not be accepted.**

Valid excuses for missing exams, missing classes, and handing assignments in late include illness, family emergencies, religious observances, official UE events such as varsity games and concerts, etc. They do not include (most) work conflicts, studying for other classes, leaving a day early or staying home an extra day over a weekend or holiday, etc. In general, an excused absence is one caused by circumstances beyond your control.

The instructor will rely on your integrity for getting work excused. If you have a valid excuse, email a note to the instructor. For religious observances and official UE events, you must inform the instructor that you will be absent **before** the absence occurs, otherwise it will be considered an unexcused absence.

Excused work must be made up within one calendar week from the original due date for full credit. Late excused work will not be accepted. Exceptions will be made for serious or prolonged illness, or other serious problems. Please note: It is your responsibility to take care of missed or late work.

Attendance Policy

Attendance is important and expected. Attendance records will be maintained in accordance with Federal Law, but will not be used in the determination of grades, except to the extent it affects the in-class exercise portion of your grade and in borderline cases. Students are responsible for all material covered in class. If you miss a class, find out what was covered from another student. You are responsible for checking the course home page for new assignments even if you miss class.

Disability Policy:

It is the policy and practice of the University of Evansville to make reasonable accommodations for students with properly documented disabilities. Students should contact the Office of counseling and Health Education at 488-2663 to seek services or accommodations for disabilities. Written notification to faculty from the Office of Counseling and Health Education is required for academic accommodations.

Honor Code:

All students at the University of Evansville agree to the University honor code: I will neither give nor receive unauthorized aid, nor will I tolerate an environment that condones the use of unauthorized aid.

Written homework and in-class exercises are for you to gain experience and practice. You may collaborate with your classmates, but each student should submit a solution in his/her own words that reflect his/her understanding of the solution. Ultimately you will be required to demonstrate your proficiency of the material on exams. Therefore, it is highly recommended that you attempt all homework and in-class problems on your own before finding a solution from another source.

Projects **are to be solely your own work** unless otherwise noted. Discussing the meaning and general solution techniques of an assignment with other students is permitted. For example, discussing "How is this assignment similar or different from problems presented in the text or in lecture?" is acceptable.

Asking another person for assistance on **specific** items in your own code also is permitted, but you may not observe another person's solution or code in any format for the purposes of studying or copying it, with or without that student's permission.

If there is any doubt as to whether assistance is acceptable, consult the instructor.

Reading Schedule

This is a tentative schedule of topics for this course. You are expected to have read the assigned material before coming to class.

| <i>Week of</i> | <i>Mon</i> | <i>Tues</i> | <i>Wed</i> | <i>Thurs</i> | <i>Fri</i> |
|----------------|--|-------------|--|--------------|--|
| 08/24 | | | <i>Welcome, Website, Syllabus, Schedule Section 1.1-1.10</i> | | <i>Section 2.1-2.8 Internet Trends Section 3.1-3.12 Internet Communications,</i> |
| 08/31 | Section 3.13-3.23 Network Programming and Sockets | | Sockets and Simple Server Example | | Section 4.1-4.27 Internet Applications/Protocols/DNS |
| 09/07 | Section 5.1-5.6 Overview of Data Communications | | Section 6.1-6.8 Signals | | Section 6.9-6.14 Encoding |
| 09/14 | Section 6.15-6.22 Encoding | | Section 7.1-10 Transmission Media | | Section 7.11-7.23 Transmission Media |
| 09/21 | Section 8.1-8.16 Reliability and Channel Coding | | Section 9.1 – 9.13 Transmission Modes | | Section 10.1 Modulation |
| 9/28 | Section 11.1 – 11.16- Multiplexing | | Section 12.1 – 12.10 Access and Interconnection | | Section 12.11 – 12.23 Access and Interconnection |
| 10/5 | Exam I Review | | Wellness Wed. | | Exam I |
| 10/12 | Introduction to Wire Shark | | Section 13 | | Section 14 |
| 10/19 | Section 15 | | Section 16 | | Section 17 |
| 10/26 | Section 18 | | Section 19 | | Section 20 |
| 11/2 | Section 21 | | Section 22 | | Section 23 |
| 11/9 | Section 24 | | Section 25 | | |
| 11/16 | | | | | |
| 11/23 | | | | | |

| <i>Week of</i> | <i>Mon</i> | <i>Tues</i> | <i>Wed</i> | <i>Thurs</i> | <i>Fri</i> |
|----------------|----------------|-------------|------------|--------------|------------|
| 11/24 | Review Exam II | | Exam II | | |
| 12/02 | | | | | |