

## University of Maine — ECE435: Network Engineering – Fall 2018

### Instructor:

Vincent Weaver, e-mail: [vincent.weaver@maine.edu](mailto:vincent.weaver@maine.edu)

Office: Barrows 203, Office Hours: 1pm-2pm Tues/Thurs, or e-mail for appointment

### Course Website:

[http://web.eece.maine.edu/~vweaver/classes/ece435\\_2018f/](http://web.eece.maine.edu/~vweaver/classes/ece435_2018f/)

**Lectures:** Tuesday/Thursday 3:30pm-4:45pm, Barrows 133

**Final Exam:** Thursday 20 December 2018, 2:45pm-4:45pm, Barrows 133

### Course Listing:

Focuses on the engineering aspects of data networks including physical media and interconnections, signals and noise, modulation, multiplexing, frame and packet transmission, routing, network design and network management. Problem solving and diagnostic methods, legal and professional issues, ethics and policies, and security aspects of interconnected networks are discussed. Students gain hands-on experience and complete networking projects.

**Pre-requisites:** ECE331 or COS331 or ECE471 (or permission of instructor)

This course will be easier if you already have some Linux command-line experience.

**Textbook:** None

**Hardware:** Access to system with wired Ethernet (Raspberry Pi, Linux desktop/laptop, etc.)

### By the end of the course you will:

- Be able to identify the OSI Network Layers
- Program sockets in C
- Know how common protocols work (DNS, ssh, SMTP, http)
- Be able to write a simple webserver
- Understand how public-key encryption, key exchange, and hashes work
- Know all about TCP/IP, IPv4 and IPv6
- Use tcpdump to analyze network traces
- Explain how wired Ethernet works
- Be able to make Ethernet cables
- Explain how Wi-fi works
- Know how routing works
- Understand practical and ethical concerns with network security
- Know the tradeoffs found at the physical layer (wire, fiber, wireless)

### Assignments:

Assignments will be announced in class and posted to the website.

Homework submissions will be done via e-mail.

### Grading:

Class Participation (5%)

11 homework assignments (lowest one dropped) (50% total)

1 project (20%)

1 midterm exam (10%), 1 final exam (15%)

**Late Work:** Late work is penalized at 20% a day.

**Regrade requests:** Please submit timely re-grade requests via e-mail.

## University of Maine required Statements

### **Academic Honesty Statement**

Academic honesty is very important. It is dishonest to cheat on exams, to copy term papers, to submit papers written by another person, to fake experimental results, or to copy or reword parts of books or articles into your own papers without appropriately citing the source. Students committing or aiding in any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University.

### **Students with disabilities statement**

If you have a disability for which you may be requesting an accommodation, please contact Student Accessibility Services, 121 East Annex, 581-2319, as early as possible in the term. Students who have already been approved for accommodations by SAS and have a current accommodation letter should meet with me (the instructor of the course) privately as soon as possible.

### **Course Schedule Disclaimer (Disruption Clause)**

In the event of an extended disruption of normal classroom activities, the format for this course may be modified to enable its completion within its programmed time frame. In that event, you will be provided an addendum to the syllabus that will supersede this version.

### **Sexual Violence Policy and Sexual Discrimination Reporting**

The University of Maine is committed to making campus a safe place for students. Because of this commitment, if you tell a teacher about an experience of sexual assault, sexual harassment, stalking, relationship abuse (dating violence and domestic violence), sexual misconduct or any form of gender discrimination involving members of the campus, your teacher is required to report this information to the campus Office of Sexual Assault & Violence Prevention or the Office of Equal Opportunity.

If you want to talk in confidence to someone about an experience of sexual discrimination, please contact these resources:

- For confidential resources on campus: Counseling Center: 207-581-1392 or Cutler Health Center: at 207-581-4000.
- For confidential resources off campus: Rape Response Services: 1-800-310-0000 or Spruce Run: 1-800-863-9909.
- Other resources: The resources listed below can offer support but may have to report the incident to others who can help: For support services on campus: Office of Sexual Assault & Violence Prevention: 207-581-1406, Office of Community Standards: 207-581-1409, University of Maine Police: 207-581-4040 or 911.

Or see the OSASP website for a complete list of services at <http://www.umaine.edu/osavp/>