Credits: 3
Instructor: Min Song
Office: Kaufman 231M
Course Web Page: www.odu.edu/networking
Phone: (757) 683-5294
Email: msong@odu.edu
Class Hours: Mondays and Wednesdays, 4:45 – 7:45 PM
Office Hours: Mondays and Wednesdays, 1:30 – 4:30 PM
Prerequisite:
- ECE 642
- Java/C++

Course Description and Objectives:
This is an advanced graduate-level communication networking class focusing on cutting-edge technologies. Students will learn how to apply the fundamental knowledge to improve the network performance in a secured context. The entire semester is divided into two parts: lectures and presentations. The objectives of this course are to:
- Learn how to identify research problems and apply the fundamental knowledge to solve the problems
- Understand the significance of information security and develop network security protocols
- Study the fundamentals of mobile ad hoc networks and wireless sensor networks
- Explore the technique of network programming
- Learn how to control communication networks
- Examine the mechanisms of network performance analysis and improvement
- Learn how to integrate different networks, such as ATM and IP networks
- Learn the usage of network simulation tools, such as OPNET and ns-2.

Tentative schedule:
May 7 (lecture)
30-minute examination
Packet-switched networks – IP (reading: chapters 1, 2, and 3)
Term papers are assigned
H/W 1 is assigned (ALL H/W are due one week after the assignment.)

May 9
Congestion and flow controls (reading: chapters 10 - 13)
Presentation of your term paper plan
3-page term paper plans are due (INDIVIDUAL work)
May 14 (lecture)
Virtual circuit-switched networks – ATM (reading: chapter 5)
*Network programming assignment is assigned (3-member team work)*
*H/W 2 is assigned*

May 16 (lecture)
Network performance analysis – queuing theory (reading: chapters 7 and 8)

May 21
Presentation of your term paper progress

May 23 (lecture)
Switches/routers architecture (reading: handout)
*Network programming assignment is due*
*H/W 3 is assigned*

May 28 *No class*

May 30
Presentation of your term paper progress
*Submit five IEEE journal/IEEE Infocom/IEEE Mobicom/ACM SenSys papers that were published during last five years and related to your term-paper topic.*

June 4
*Mid-term exam (both lecture materials and term-paper references)*

June 6 (lecture)
Network security (reading: Tanenbaum chapter 8)
*H/W 4 is assigned*

June 11
Presentation of your term paper progress

June 13 (lecture)
Mobile ad hoc and wireless sensor networks (reading: Tanenbaum 2.3, 4.4, 4.5, 4.6, and handout)
*H/W 5 is assigned*

June 18 (lecture)
Quality of service control – packet scheduling (reading: chapter 17)
WUGS – (reading: handout)

June 20 Final examination
Comprehensive Presentation of term paper & one question from the course materials after the mid-term exam.
Required Work:

- Six homework, including the network programming assignment
- Four presentations
- One term paper – due on June 20, NO EXTENSION
- Two examinations

Grading Scale (%):

- Homework 18
- Presentations 12
- Term paper 30
- Examinations 40 (25+15)

Academic Honesty:

Students are expected to follow the ODU Honor Code for all assignments, projects, term papers, and examinations. All work that you turn in with your name on it should reflect your work; references are provided at the appropriate places. A first offense will result in the homework/examination/paper grade of zero for all participants. A second offense will result in a grade of F for the course for all participants.

Disability Statement:

If there is any individual in this class who is in need of academic accommodations because of disabilities, please make an individual appointment in the first week of class with the instructor to discuss accommodations. Upon individual request, this syllabus can be made available in alternative forms.

ODU Email accounts:

Please activate your email account. Important information about the class will be announced through your ODU email.

Attendance Policy:

It is mandatory to attend all classes. Two points will be subtracted from your final record for one absence. Should an emergency cause the absence, the instructor needs to be notified as soon as possible.

Make-up Examinations

Examinations can be re-arranged ONLY if you have a physical problem evidenced by your doctor’s prescription.

Questions to Your Grades

You may request to reevaluate your examinations, term paper, and other course materials if you have any question to your course grade. This request must be formally submitted to the instructor within 14-workday after the grade was assigned.