

CRN [10897] [CS 4313-001]
CRN [10898] [CS 5313-001]
Computer Networks
Spring 2020 @ Arkansas State University

Course Information:

Instructor:

- Instructor: Dr. Donghoon Kim, Assistant Professor of Computer Science
- Office: Computer Science & Mathematics, 126
- Email: dhkim@astate.edu
- Phone: 870-972-3067

Meeting day/time/place:

- Class Time: TR 4:00pm - 5:15pm
- Office hour: M 9:30am – 11:30am, TR1:45pm-2:45pm or by appointment
- Place: Computer Science & Mathematics, 211

Textbook and Materials

Course materials will be available on course homepage. Please visit it often for changes and announcements.

- **Textbook:** Online Supplements will be posted
 - Required: Computer Networking: A Top Down Approach (7th edition), James Kurose, Keith Ross, ISBN-10 (0133594149), or its 5th/6th edition

Purpose and Goals/Learning Outcomes

Course Description: This course studies issues and principle involved in the design of computer networks using the OSI reference model and the internet as a framework. The main goal of this course is to understand layering in computer networks, functions and protocols within a layer, and how layers fit together into the Internet.

Prerequisites or co-prerequisites: CS 3233 (Operating Systems)

Course Objectives: This course examines the important problems in operating system design and implementation. The operating system provides an established, convenient, and efficient interface between user programs and the bare hardware of the computer on which they run.

Course Outputs: Upon successful completion of this course, a student will have gained experience and an understanding of the following topics:

- Become familiar with layered communication architecture (OSI and TCP/IP)

- Understand the design of functions and protocols within a layer and layers
- Understand the client/server model and key application layer protocols
- Become familiar the knowledge of the functions about the network devices such as hubs, switches, bridges, and routers
- Understand the basics of error detection including parity, checksums, and CRC
- Understand the principles of routing and the semantics and syntax of IP
- Become familiar some software tools to monitor network and debug
- Familiarize for current topics such as security, wireless and mobile networks and/or other topics

Program Level Outcome:

After completion of the Master of Science degree in Computer Science, a student will have met the following learning outcomes:

- M.S. Computer Science graduate students should have a deeper understanding of the theory and application of algorithms, programming languages, and computer processes.
- M.S. Computer Science graduate students should have the ability to apply advanced analysis techniques to problem identification and solution in computing applications.
- M.S. Computer Science graduate students should have the ability to apply advanced implementation techniques to problem identification and solution in computing applications.

Course Activities and Assignments:

- **Assignment:** Students will have three assignments which include problem solving problem and programming.

Grading Policies:

Grading are assigned on a standard scale with the following weights:

- Midterm 1: 20%
- Midterm 2: 20%
- Final Exam: 30%
- Assignment/Programs: 25%
 - 3 problem solving assignments
 - 3 programming assignments
- Attendance: 5%
 - 4 times absence allowed; after that, 1 pt (out of the final grade) taken off for each absence
- Note: Check course policies for **Cheating and plagiarism**

Grading Scale:

- A \geq 90%, B \geq 80%, C \geq 70%, D \geq 60%, and F<60%

Course Schedule (tentative):

Class	Date	Topics	Resources	Deadlines
1	1/14;T	Introduction		
2	1/16;R	Ch1-Internet		
3	1/21;T	Ch1-Network Core		
4	1/23;R	Ch1-Packet switched networks		
5	1/28;T	Ch2-Socket programming	HW1 (program)	2/6
6	1/30;R	Ch2-App;Web and HTTP		
7	2/4;T	Ch2-App;Email		
8	2/6;R	Ch2-App;DNS	HW2	2/13
9	2/11;T	Ch3-Transport;UDP		
10	2/13;R	Ch3-Transport; TCP		
11	2/18;T	Exam1		
12	2/20;R	Ch3-Transport	HW3 (program)	3/5
13	2/25;T	Ch3-Transport		
14	2/27;R	Ch3-Transport; Congestion control		
15	3/3;T	Ch4-Network; Router		
16	3/5;R	Ch4-Network; IPv4		
17	3/10;T	Ch4-Network; IPv4	HW4	3/17
18	3/12;R	Ch4-Network; NAT		
19	3/17;T	Ch4-Network; NAT		

20	3/19;R	Exam 2		
21	3/24;T	No class (spring break)		
22	3/26;R	No class (spring break)		
23	3/31;T	Ch5-Network	HW5 (program)	4/16
24	4/2;R	Ch5-Network:Control Plane; Routing algorithms		
25	4/7;T	Ch5-Network:Control Plane; Routing algorithms		
26	4/9;R	Ch5-Network:Control Plane; Routing algorithms		
27	4/14;T	Ch6-Link; Error-Detection		
28	4/16;R	Ch6-Link; Error-Detection		
29	4/21;T	Ch6-Link; ARP	HW6	4/30
30	4/23;R	Ch6-Link; ARP		
31	4/28;T	Ch6-Retrospective		
32	4/30;R	Review		
Final Exam	5/7;R 5:30pm -7:30pm	Final Exam (Comprehensive)	https://www.astate.edu/a/registrar/files/Spring%202020%20Final%20Exam%20Schedule.pdf?language_id=1	

Course Policies:

- **Food and Drinks:** Department policy restricts bringing either food or drinks into the classroom.
- **Electronic Devices:** Cell phones are restricted during class. Cell phones must be turned off during the lecture. If your cell phone rings during class, you may be asked to leave. Other devices (computers, recorders, etc.) may be allowed, but you must ask the instructor before you use them during class.

- **Special Facilities:** Students who require academic adjustments in the classroom due to a disability must first register with ASU Disability Services. Following registration and within the first two weeks of class, please contact the instructor to discuss the appropriate academic accommodations to ensure equal access to this course.
- **Attendance:** Attendance is required. If you miss a class, you are responsible for material covered during the class you missed, this includes any assignments made. Do not expect the instructor to provide one-on-one instruction for missed classes. You will be excused for prescheduled university-sponsored events for which you are required to attend, but you must notify the instructor well in advance of each event date.
- **Cheating and Plagiarism:** You are encouraged to discuss problems and programming assignments with each other. Helping others learn is often the most powerful way of mastering the material yourself. However, taking somebody else's work and claiming it as your own is plagiarism and will be punished. Do not leave copies of the programming assignments in the trash in a public place -- dispose of them at home. Also, do not leave electronic copies of your work in unsecured directories. There are harsh penalties for those found cheating; **It will get 0 point.**
- **Rescheduling Tests:** Tests cannot be rescheduled due to testing in other classes. If a test is missed due to extenuating circumstances then you must notify the instructor as soon as possible. The circumstances must be documented by you and must be excusable in order to reschedule a test.
- **Late Assignments:** For most homework assignments, the class will receive a working solution within a week after the due date. NO assignments will be accepted that are more than one week late. Assignments that are less than a week late, will be accepted only if you have made arrangements with the instructor and can show you have made progress on a solution. Late assignments may have points deducted.