



Ve489 Computer Networks

Syllabus

Degree Program:

- ECE-Electrical & Computer Engineering
 ME -Mechanical Engineering
 General Courses for Both ECE & ME Degree Programs

Course Name: Computer Networks

Course Code: VE489

Course Credits: 4

Course Category: Required Elective

Terms Offered:

- Fall _____ (YYYY-YYYY)
 Spring _____ (YYYY-YYYY)
 Summer 2017 _____ (YYYY-YYYY)

Course Pre/Co-requisites: Ve482, graduate standing, or permission of instructor

Textbook:

Required Texts & Materials	Computer Networks, 4 th Edition, Andrew S. Tanenbaum, Prentice Hall
Suggested Texts, Readings, & Materials	Communication Networks, 2 nd Edition, Alberto Leon-Garcia and Indra Widjaja, McGraw Hill W.R. Stevens, et al., UNIX Network Programming, vol. 1: Networking APIs: The Sockets Networking API, 3rd. ed., Addison-Wesley, 2004.



Course Descriptions:

This course covers basic system architecture, protocol stack, and algorithms and protocols of computer communication networks. The detailed topics include:

- Get the basic knowledge of computer network architectures, services, applications, and protocol models;
- Study protocols in different layers including physical, data link, network, and transport layers;
- Understand transmission media, switching, multiple access arbitration, network routing, congestion control, flow control, multicast, and security;
- Learn the detailed Internet architecture.

Instructors: (Email, Office hours and Office Room No. should be included)

Prof. Xudong Wang

Email: wxudong@sjtu.edu.cn

Office Phone: 34207221

Office Room: 214

Office Hours: 4:00-5:00pm (Tuesday/Thursday) or by appointment

Classroom: Dong Zhong Yuan E1-100

Class Time: Tuesday, 2:00-3:40 pm

Thursday, 2:00-3:40 am

Friday, 10:00-11:40 pm (odd-week)

Teaching Assistants:

Name: Yichao Yang

Email: yycptt@sjtu.edu.cn

Name: Qinye Li

Email: sindyleaf@sjtu.edu.cn

Recitation Time: See TAs' announcement.

TA session: See TAs' announcement.

Place: See TAs' announcement.



Grading Policy:

Quiz	2%	Pop-up quiz (no prior notice)
Homework	15%	About 8 sets of homework and small project
Course Project	15%	Team work is encouraged.
Bonus	3%	Great attendance and class participation
Mid-Exam	33%	2-hour exam
Final Exam	35%	2-hour exam

Academic Integrity:

1. Students are required to seriously obey the honor code as regulated by UM-SJTU Joint Institute and SJTU. Violation of the honor code will be reported to the honor council.
2. Students must carefully follow JI' exam room regulations.
3. All registered students are required to attend each class. Absence from class must be approved by the instructor. Students must arrive on time and are not allowed to leave during class unless it is approved by the instructor.
4. All homework assignments must be submitted on time. Homework must be completed by a student independently, although discussion and collaborations are allowed. Copying homework is a violation of the honor code.
5. Cell phones must be off in class. No web browsing is allowed unless it is advised to do so by the instructor. No food is allowed in class, but is allowed during break time.
6. Individual course project must be completed independently. The project report must clearly identify the existing work and students' own contribution.
7. Posting slides of this course to any websites is prohibited. Students are not allowed to distribute slides to other students, unless it is approved by the instructor.

Detailed Schedule:

Weeks	Dates	Time	Contents
Week 1	May 16	2:00-3:40 pm	Introduction, Network services and applications,
	May 18	2:00-3:40 pm	Computer network architecture
	May 19	10:00-11:40 am	Computer network architecture
Week 2	May 23	2:00-3:40 pm	Basic Internet architecture
	May 25	2:00-3:40 pm	Physical layer: architecture and technology of communication systems
	May 26	10:00-11:40 am	No class



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Week 3	May 30	2:00-3:40 pm	Holiday, no class
	June 1	2:00-3:40 pm	Modulation, (<i>Mini Project 1 assignment</i>)
	June 2	10:00-11:40 am	transmission medium and multiplexing
Week 4	June 6	2:00-3:40 pm	Data link layer: functionalities, framing
	June 8	2:00-3:40 pm	ARQ: schemes, performance, and analysis (<i>Mini Project 1 due</i>)
	June 9	10:00-11:40 am	Make up class
Week 5	June 13	2:00-3:40 pm	ARQ, flow control and time recovery, Link layer multiplexing, queuing; Medium access control: principles, Differences between multiplexing, multi-access, and MAC
	June 15	2:00-3:40 pm	Approaches of MAC: random access protocols
	June 16	10:00-11:40 am	Lab Lecture (<i>Mini Project 2 assignment</i>)
Week 6	June 20	2:00-3:40 pm	No class (rescheduled to June 9, approved)
	June 22	2:00-3:40 pm	No class (rescheduled to July 7, approved)
	June 23	10:00-11:40 am	No class
Week 7	June 27	2:00-3:40 pm	Mid-term review, Demo of wireless communication networks
	June 29	2:00-3:40 pm	Mid-Term Exam
	June 30	10:00-11:40 am	Lab Lecture (<i>Mini Project 2 due</i>)
Week 8	July 4	2:00-3:40 pm	IEEE 802.11 MAC Protocol
	July 6	2:00-3:40 pm	Reservation based MAC protocols, polling
	July 7	10:00-11:40 am	Make up class
Week 9	July 11	2:00-3:40 pm	MAC in various networks, details of bridging and VLANs
	July 13	2:00-3:40 pm	Network layer, Routing protocols/algorithms: shortest path routing (<i>Mini Project 3 assignment</i>)
	July 14	10:00-11:40 am	Distance vector routing, link state routing, hierarchical routing, etc.
Week 10	July 18	2:00-3:40 pm	Packet-level traffic management: scheduling and prioritization
	July 20	2:00-3:40 pm	Flow-level traffic management: admission control, leaky bucket, token bucket (<i>Mini Project 3 due</i>)
	July 21	10:00-11:40 am	No class
Week 11	July 25	2:00-3:40 pm	Flow-level traffic management: admission control, leaky bucket, token bucket
	July 27	2:00-3:40 pm	Transport layer: basic mechanisms of TCP and UDP
	July 28	10:00-11:40 am	The details of TCP (<i>Mini Project 4 assignment</i>)
Week 12	Aug 1	2:00-3:40 pm	The details of TCP
	Aug 3	2:00-3:40 pm	Final review
	Aug 4	10:00-11:40 am	No class. (<i>Mini Project 4 due</i>)
Week 13	Aug 8	2:00-3:40 pm	Final Exam
	Aug 10	2:00-3:40 pm	
	Aug 11	10:00-11:40 am	