Course Profile

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 2011-2012 (YYYY-YYYY)

Course Pre/Co-requisites:

No prerequisites

Textbook:

Required Texts & Materials	Computer Networks, 4th Edition, Andrew S. Tanenbaum, Prentice Hall
Suggested Texts, Readings, & Materials	Communication Networks, 2nd 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: by appointment
Classroom: Dong Shang Yuan 206
Class Time: Tuesday, 2:00-3:40 pm
Thursday, 8:00-9:40 am
Friday, 2:00-3:40 pm

Teaching Assistants: (Email, Phone No. and Office hours should be included)

Name: Tang Yinqi	Name:	Name:
Email: tangyinqi@gmail.com	Email:	Email:
Phone: 134-7276-8065	Phone:	Phone:

Recitation Time: Thursday, 6:00pm-8:00pm
TA session: Thursday, 8:00pm-10:00pm
Place: Dong Shang Yuan 401

Grading Policy:

Attendance	**5%**	**1% is deducted per absence of one attendance check until zero percent.**
Homework	**10%**	**About 6 sets of homework**
Quiz	**15%**	**3% per quiz. No prior notice will be given for the time of quiz.**
Course Project	**15%**	**Needs to be demonstrated. Team work is encouraged.**
Mid-Exam	**25%**	**2-hour exam**
Final Exam	**30%**	**2-hour exam**

Academic Integrity: (Any types of honor code regulations like class rules, homework policy, exam rules or project collaboration policy could be defined here)

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. A demo is required for the course project.

Detailed Schedule:

Weeks	Dates	Time	Contents
Week 1	**May 15**	2:00-3:40 pm	Introduction
	May 17	8:00-9:40 am	Network services and network applications
	May 18	2:00-2:40pm	Computer network architecture
Week 2	**May 22**	2:00-3:40 pm	Basic Internet architecture
	May 24	8:00-9:40 am	Physical layer: architecture and technology of communication systems
	May 25	2:00-2:40pm	Modulation
Week 3	**May 29**	2:00-3:40 pm	Error control
	May 31	8:00-9:40 am	transmission medium and multiplexing
	June 1	2:00-2:40pm	Data link layer: functionalities
Week 4	**June 5**	2:00-3:40 pm	Data link layer: framing
	June 7	8:00-9:40 am	ARQ: schemes, performance, and analysis
	June 8	2:00-2:40pm	ARQ: analysis
Week 5	**June 12**	2:00-3:40 pm	Data link layer: flow control and time recovery
	June 14	8:00-9:40 am	Link layer multiplexing, queuing.
	June 15	2:00-2:40pm	Bridging, switching
Week 6	**June 19**	2:00-3:40 pm	Medium access control: principles , Mid-term exam review
	June 21	8:00-9:40 am	No class
	June 22	2:00-2:40pm	No class
Week 7	**June 26**	2:00-3:40 pm	*Mid-Term Exam*
	June 28	8:00-9:40 am	Differences between multiplexing, multi-access, and MAC (substitute lecture)
	June 29	2:00-2:40pm	No class
Week 8	**July 3**	2:00-3:40 pm	Approaches of MAC: random access protocols
	July 5	8:00-9:40 am	Random access protocols
	July 6	2:00-2:40pm	Reservation based MAC protocols, polling
Week 9	**July 10**	2:00-3:40 pm	MAC in various networks, details of bridging, Network layer: functionalities
	July 12	8:00-9:40 am	Network layer, Routing protocols/algorithms: shortest path routing
	July 13	2:00-2:40pm	Distance vector routing, link state routing, hierarchical routing, etc.
Week 10	**July 17**	2:00-3:40 pm	Packet-level traffic management: scheduling and prioritization
	July 19	8:00-9:40 am	Flow-level traffic management: admission control, leaky bucket, token bucket
	July 20	2:00-2:40pm	Transport layer: basic mechanisms of TCP and UDP
Week 11	**July 24**	2:00-3:40 pm	The details of TCP
	July 26	8:00-9:40 am	The details of TCP
	July 27	2:00-2:40pm	No class
Week 12	**July 31**	2:00-3:40 pm	Internet architecture. Final review
	Aug 2	8:00-9:40 am	Final exam
	Aug 3	2:00-2:40pm	No classes are arranged on these dates, because the 60 credit hours will be reached on Aug 2.
Week 13	**Aug 7**	2:00-3:40 pm	
	Aug 9	8:00-9:40 am	
	Aug 10	2:00-2:40pm	