

**SAN JOSE STATE UNIVERSITY
COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL ENGINEERING**

EE 281-01

T.Th: 4:30-5:45PM

Room: CL 238

↩ Internetworking ↩

Dr. Jalel Rejeb

Spring 2007

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Office Hours:

M.W.: 4:15---5:15PM

**T.R.: 6:00---7:00PM,
when office door is open,
or by appointment**

Website URL: <http://www.engr.sjsu.edu/jrejeb>

Course Objectives:

The course provides the underlying principles of modern network design through detailed discussion of existing standards. TCP/IP stack architecture is introduced in terms of the OSI model. Fundamental principles of data delivery and how it is provided by IP, and ATM are examined and analyzed. Emphasis is given to IP addressing and datagram routing mechanisms. Performance evaluation, congestion control, and fundamentals of queuing theory are also covered.

Topics Covered:

- Layers in The OSI reference model
- TCP/IP Protocol Suite, and ATM
- Routing Protocols and Switch Fabrics
- Congestion control and avoidance
- Application Layer: Network Security

Outcomes Assessment:

- Two midterm examinations and a final examination
- Project: Lab exercises, network simulators, and paper reviews
- Pop Quizzes and periodic homework assignments
- Class participation & bonus

Textbook:

Computer Networks, a System approach, 3rd Edition by Larry Peterson, MKP 2000

References:

- *Computer Networks*, 4th edition, by Andrew S. Tanenbaum, PH 2002 (*highly recommended*)
- *Unix Network Programming*, Volume 1, 2nd edition, by Richard Stevens, PH 1998

Grading Policy

The overall course grades (letter-grades) will be assigned based on the overall class distribution. The weights of the homework assignments and the exams are as listed below:

Midterm Exam 1	
15%	
Midterm Exam 2	
20%	
Pop Quizzes	20%
Homework	
Project/Lab	15%
Final Exam	30%

<i>Grading Percentage Breakdown</i>	
94% and above	A
93% - 90%	A-
89% - 87%	B+
86% - 80%	B
79% - 77%	C+
76% - 70%	C
69% - 67%	D+
66% - 64%	D
63% - 60%	D-
below 60%	F

Note: Curving is used to adjust the overall average in case it is lower than 80%

Examinations:

- There will be two midterm exams and a comprehensive final examination. Exams are closed book and notes.
- Exams cover
 - assigned reading materials from the textbook
 - discussed materials in the lectures
 - class handouts and notes
 - Homework and practice problems
- Exams will be announced at least one week prior to administration.
- There will be no make-up exams (in very special circumstances, written excuse and official proofs are required for make-up exams).
- Final Exam is scheduled:

Wednesday, May 23	1445-1700
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Pop Quizzes

- 10 to 15 minute Pop quizzes will be given on timely fashion. They are based on the material and relevant examples discussed on the *two preceding* class lectures from the quiz session.
- There is no make up for the quiz- *no exception!*

Homework and handouts:

Homework assignments will be given periodically however they are not collected. Homework solutions will be made available in the class website.

- Please refer to the class website for handout, homework solutions and announcements. You are responsible for all material posted on the class website:

<http://www.engr.sjsu.edu/jreheb/private/EE281/EE281.htm>

The password to access the material in this website will be announced in class.

Lab/project

It consists of Cisco Lab experimentation. Material and instructions are on outline at the web location:

<http://www.engr.sjsu.edu/ciscolab>

To have access you need to use

Username:student
password: cisco01.

The Cisco lab is located in room E490

More specifications about the project will be given in class.

Course Outline

(Includes...)

I. Introduction	3 lectures
* ISO, OSI reference model	
* TCP/IP suite	
II. Physical Layer	4-3 lectures
* FDM, TDM	
* Relating Metrics performance issue	
III. Direct Link Network and DDL	5-6 lectures
* Encoding, Manchester	
* Framing	
* Error Detection, CRC	
* Reliable Transmission, ARQ, Sliding Window Protocol	
* IEEE 802 project, Ethernet, FDDI	
* Switching Hardware, Crossbar, Batcher-Banyan switch	
IV. Network Layer & Routing	7-9lectures
* Static routing algorithms	
* Distance-vector routing, link-state routing	
* Tunneling, Fragmentation	
* IP protocol, Subnetting, ICMP, ARP, RARP	
* IGP, EGP, CIDR	
* ATM and its layers	
V Transport Layer	5-6 lectures
* UDP	
* TCP, sliding window	
* Queuing Disciplines, FCFS, WFQ	
* Congestion avoidance, RED, DECBbit	
* QoS	
VI Queuing/Network Security	5- remaining
* Application Layer: network security	

- * Probability Theory-review
- * Little's Results
- * M/M/1, M/G/1 queue, priority queuing

University, College, or Department Policy Information:

a) Academic integrity statement (from Office of Judicial Affairs):

"Your own commitment to learning, as evidenced by your enrollment at San José State University and the University's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty are required to report all infractions to the Office of Judicial Affairs. The policy on academic integrity can be found at <http://www2.sjsu.edu/senate/S04-12.pdf>

b) Campus policy in compliance with the Americans with Disabilities Act:

"If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with DRC to establish a record of their disability."

c) Department Policy

EE@SJSU

Honesty and Respect for Others and Public Property

EE HONOR CODE

The Electrical Engineering Department will enforce the following Honor Code that must be read and accepted by all students.

"I have read the Honor Code and agree with its provisions. My continued enrollment in this course constitutes full acceptance of this code. I will NOT:

- *Take an exam in place of someone else, or have someone take an exam in my place*
- *Give information or receive information from another person during an exam*
- *Use more reference material during an exam than is allowed by the instructor*
- *Obtain a copy of an exam prior to the time it is given*
- *Alter an exam after it has been graded and then return it to the instructor for re-grading*
- *Leave the exam room without returning the exam to the instructor."*

Measures Dealing with Occurrences of Cheating

- *Department policy mandates that the student or students involved in cheating will receive an "F" on that evaluation instrument (paper, exam, project, homework, etc.) and will be reported to the Department and the University.*

A student's second offense in any course will result in a Department recommendation of suspension from the University