San Jose State University
College of Engineering
Electrical Engineering Department

EE181 (Section 01)  Fundamentals of Internetworking  Fall 2019

Course and Contact Information

Instructor: Nader F. Mir
Office Location: Department of Electrical Engineering, College of Engineering, E251
Telephone: (408) 924-3986
E-mail Address: nader.mir@sjsu.edu (preferred contact method: in person - office hours)
Office Hours: M/W: 11:45am-1:00pm
Instructor’s Web-site: http://www.sjsu.edu/people/nader.mir/
Class Days/Time: Mon/Wed, 10:30-11:45am
Classroom: ENG 331
Prerequisites: EE118

Course Description and Outcomes

Course Description: Data communication concepts, protocols, algorithms; 7-layer OSI reference model and implementations; physical media (fiber, wire); switching systems; Local Area Network (LAN) architectures and components, Ethernet, TCP/IP, and related standards. Credit Hours: 3

Course Learning Outcomes (CLOs). Upon successful completion of this course, students will be able to:

1. Analyze and differentiate the two types of computer communication networks: connection oriented and connectionless strategies.
2. Describe the fundamental Internet protocol stacks.
3. An ability to design basic networking devices such as modems, multiplexers, repeaters, hubs, bridges, and routers.
4. Identify, formulate and solve error control methods at the link layer such as CRC.
5. Analyze flow control methods at the link layer such as sliding window.
6. Analyze basic LANs, Ethernet, for applications in campuses and buildings.
7. Analyze link layer issues for LANs: MAC addresses, multiple access methods.
9. Analyze basic transport layer mechanism.
10. Analyze basic application layer mechanisms.
ABET Outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Required Textbook/Readings

Required Textbook

Computer and Communication Networks, 2nd Ed.
Author: Nader F. Mi
ISBN: 0133814742
Publisher: Pearson Prentice-Hall.

(Note: This 2nd edition textbook is sold out in most online book stores such as Amazon as it is in transition to its 3rd edition and so the publisher has stopped reprinting it. Do not buy the 1st edition. You may still be able to find its original, used, or rental copy in some stores. However, for those who may have difficulty to find a copy, I may be able to provide the PDF copies of the covered chapters in the canvas.)
Other Periodical Readings

1. IEEE Communications Magazine
2. IEEE Communications Standards Magazine
3. IEEE Network Magazine

Course Requirements and Assignments

Class Participation: The class attendance is required and is an important factor to achieve the leaning objectives of this course.

Homework Assignments: Normally bi-weekly, hardcopies of assignments are required to be turned in class. Working on assignments is an important factor to achieve the leaning objectives of this course. Answers to homework will be given in class before each exam.

Exams:
- A Midterm Exam (Wednesday, October 23rd, during normal class time, location: TBA)
- Final Exam (Thursday, December 12th, starting at 9:45 am, location: TBA)

Evaluation and Grading Information

Assignments: 10%

Midterm Exam: 40%

Final Exam: 50%

Standard Grading Percentage Breakdown (after possible normalizations):

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<th>Grade</th>
<th>Points</th>
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<td>A plus</td>
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<td>A</td>
<td>930 to 959</td>
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<td>A minus</td>
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<td>C plus</td>
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Tentative Course Schedule

1. Packet-Switched Networks Fundamentals – Chapter 1 (Weeks 1, and 2)
2. Networking Devices, Routers, and Physical Layer Devices – Chapter 2 (Weeks 2 and 3)
3. Links and Transmission Systems – Chapter 3 (Weeks 4 and 5)
4. Local Area Networks, and Networks of LANs Architectures – Chapter 4 (Weeks 6 and 7)
   Quick Review, HW answers, and Midterm Exam (Week 8)
5. Internet Protocol (IP) and Routing – Chapters 1 and 5 (Weeks 9, 10, 11)
6. Transport Protocols and TCP Technology – Chapter 8 (Weeks 12 and 13)
7. Basic Network Applications – Chapter 9 (Weeks 14 and 15)
   Quick Review, HW answers, and Final Exam (Week 16)

NOTE: No class on 9/4.

University Policies

Per University Policy S16-9 (http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs’ Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/”. Make sure to visit this page, review and be familiar with these university policies and resources.

EE Department 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.