San Jose State University
Electrical Engineering Department

EE181 Fundamentals of Internetworking (Computer Networks) Fall 2016

Course and Contact Information

Instructor: Nader F. Mir
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Office Hours: M/W: 12:00n-1:30pm
Instructor’s Web-site: http://www.sjsu.edu/people/nader.mir/
Class Days/Time: Mon/Wed, 10:30-11:45am
Classroom: Engineering Building E331
Prerequisites: EE118

Course Format

Course: EE181, Section: 01, Course Title: Fundamentals of Internetworking, Credit Hours: 3

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.

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. ABET Outcomes: (a)(e)
2. Describe the fundamental Internet protocol stacks. ABET Outcomes: (a)
3. An ability to design basic networking devices such as modems, multiplexers, repeaters, hubs, bridges, and routers. ABET Outcomes: (b)
4. Identify, formulate and solve error control methods at the link layer such as CRC. ABET Outcomes: (a)(e)
5. Analyze flow control methods at the link layer such as sliding window. ABET Outcomes: (a)(e)
6. Analyze basic LANs, Ethernet, for applications in campuses and buildings. ABET Outcomes: (a)(b)(e)
7. Analyze link layer issues for LANs: MAC addresses, multiple access methods ABET Outcomes: (a)(e)
8. Analyze IPv4 and IPv6 network schemes. ABET Outcomes: (a)
9. Identify, formulate and solve packet routing algorithms. ABET Outcomes: (a)(b)(e)(k)
10. Identify, basic transport layer mechanism. ABET Outcomes: (a)

**ABET Outcomes**

The letters in parentheses in the course learning objectives refer to ABET criterion 3 outcomes satisfied by the course. These are listed below as a reference:

(a) An ability to apply knowledge of mathematics, science, and engineering

(b) An ability to design and conduct experiments, as well as to analyze and interpret data

(c) An ability to design a system, component, or process to meet desired needs

(d) An ability to function on multi-disciplinary teams

(e) An ability to identify, formulate, and solve engineering problems

(f) An understanding of professional and ethical responsibility

(g) An ability to communicate effectively

(h) The broad education necessary to understand the impact of engineering solutions in a global and societal context

(i) A recognition of the need for, and an ability to engage in life-long learning

(j) A knowledge of contemporary issues

(k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

(l) Specialization in one or more technical specialties that meet the needs of companies

(m) Knowledge of probability and statistics, including applications to electrical engineering

(n) Knowledge of advanced mathematics, including differential and integral equations, linear algebra, complex variables, and discrete mathematics

(o) Basic sciences, computer science, and engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components

**Required Textbook/Readings**

**Required Textbook**

Title: “Computer and Communication Networks”
Author: Nader F. Mir,
ISBN: 0133814742
Published by: Pearson Prentice-Hall.

(The text book is available at SJSU campus bookstores and all online stores as Amazon or Barnes & Noble.)
Other Periodical Readings

1. IEEE Communications Magazine
2. IEEE Network Magazine

Course Requirements and Assignments

Class Participation: Class participation is a course requirement. Please be aware that there may be a number of random attendance checks throughout the semester.

Homework Assignments: Normally bi-weekly assignments to be turned in.

Exams:

- A Mid-Term Exam (Wed., October 19th, during normal class time, location: TBA)
- Final Exam (Wed., December 14th, starting at 9:45am, location: TBA)

Grading Information

Assignments: 10% (Note: answers to homework will be given in class before each exam.)

Midterm Exam: 40%

Final Exam: 50%

Standard Grading Percentage Breakdown (after possible normalizations):

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>94% and above</td>
<td>A</td>
</tr>
<tr>
<td>90% - 93%</td>
<td>A-</td>
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<tr>
<td>87% - 89%</td>
<td>B+</td>
</tr>
<tr>
<td>84% - 86%</td>
<td>B</td>
</tr>
<tr>
<td>80% - 83%</td>
<td>B-</td>
</tr>
<tr>
<td>77% - 79%</td>
<td>C+</td>
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<tr>
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<td>D</td>
</tr>
<tr>
<td>60% - 63%</td>
<td>D-</td>
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<tr>
<td>below 60%</td>
<td>F</td>
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</tbody>
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Tentative Course Schedule

1. Packet-Switched Networks Fundamentals – Chapter 1 (Weeks 1, 2, and 3)
2. Networking Devices, Routers, and Physical Layer Devices – Chapter 2 (Weeks 4 and 5)
3. Links and Transmission Systems – Chapter 3 (Weeks 6 and 7)
   Mid-term Exam and Review (Week 8)
4. Local Area Networks, and Networks of LANs architectures – Chapter 4 (Weeks 9 and 10)
5. IP and Routing Protocols – Chapter 5 (Weeks 11 and 12)
6. Advanced Topics in Networks, TCP technology – Chapters 8 (Weeks 13 and 14)
   Review/ Final Exam (Weeks 15)

Policy Information

University Academic Integrity

Students should know that the University’s Academic Integrity Policy is available at http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf. Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for Student Conduct and Ethical Development is available at http://www.sa.sjsu.edu/judicial_affairs/index.html.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make 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 requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability.

Dropping and Adding
Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information on add/drops are available at http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-298.html. Information about late drop is available at http://www.sjsu.edu/sac/advising/latedrops/policy/. Students should be aware of the current deadlines and penalties for adding and dropping classes.

Classroom Protocol

* **Exams:** All exams including the final exam will be closed book and closed notes. Except for extraordinary, documented situations, make-up exams will not be allowed. Therefore, at the beginning of the semester, make sure that you have no exam or work conflicts with the schedule of this course.

* **Cell Phones:** Students will turn their cell phones off or put them on vibrate mode while in class or exams. Students should not answer their phones in class. Students whose phones disrupt the course and do not stop when requested by the instructor will be referred to the Judicial Affairs Officer of the University.

* **Computer Use:** In the classroom, students are allowed to use computers only for class-related activities. These include activities such as taking notes on the lecture underway, following the lecture on Web-based PowerPoint slides that the instructor has posted, and finding Web sites to which the instructor directs students at the time of the lecture. Students who use their computers for other activities or who abuse the equipment in any way, at a minimum, will be asked to leave the class, and, at a maximum, will be referred to the Judicial Affairs Officer of the University for disrupting the course. (Such referral can lead to suspension from the University.) Students are urged to report to their instructors computer use that they regard as inappropriate (i.e., used for activities that are not class related).

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.