San José State University  
College of Engineering/Electrical Engineering Department  
EE181 Fundamentals of Internetworking, Section 01, Fall 2017

Refer to Canvas for the current version

Instructor: Chao-Li Tarng, Ph.D.  
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Email: chaoli.tarng@sjsu.edu  
Office Hours: Wednesday, 3:00pm – 4:00pm  
Or by appointment  
Class Days/Time: Monday and Wednesday 10:30am – 11:45am  
Classroom: ENG 331  
EE118 (with grade of “C” or better). Submit the documentation, i.e., unofficial transcript, to Canvas.  
Prerequisites: Students who do not provide documentation of having satisfied the class prerequisite requirements by the second class meeting will be dropped from the class.

Course Format  
This course offer three hours of lectures each week. Students are required to attend the class, complete the assignments on time and take the written exams. The assignments consist of problem solving exercises and using software applications for network packet analysis. Students are highly encouraged to have a personal laptop computer (Windows, Mac OS X, or Linux) and install the necessary tools. The personal computer should be able to connect to Internet.

Faculty Web Page and MYSJSU Messaging  
Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on the course shell available from the eLearning platform Canvas (i.e. eCampus) at: https://sjsu.instructure.com. You are responsible for regularly checking with the messaging system (email, discussions, announcements news) through Canvas and MySJSU to learn any updates.
Course Catalog Description
Data communication concepts, protocols, algorithms; 7-layer OSI reference model and implementations; physical media (fiber, wire); switching systems; LAN architectures and components, Ethernet, FDDI, TCP/IP, and related standards.

Prerequisite: EE 118.

http://info.sjsu.edu/web-dbgen/catalog/courses/EE181.html

Course Goals and Learning Outcomes
Course Learning Outcomes (CLO)
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

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 Texts/Readings

Textbooks

Required

  (Hard copies are available at SJSU campus bookstore and all online stores such as Amazon. Online copies are available at sites such as VitalSource.)

References


Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

NOTE that University policy F69-24, “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”
Classroom Protocol

- Students are encouraged to ask questions in the class.
- Each student is required to engage in classroom activities, submit assignments and reports on time, and take exams and tests on time.
- Web-browsing in class is not allowed. Cell Phones are to be turned off during lectures and tests. During exams if you receive a cell phone call or page it will be assumed that you have completed your exam and no further work will be allowed. (More details in “Additional Policies and Procedures” section)
- No make-up exams will be held.
- Exams will be closed-book.
- Student causing disruption in the class will be asked to leave the class

Assignments and Grading Policy

Homework/Quiz/Lab 15%
Midterm Exam 35%
Final Exam 50%

The instructor reserves the right to change the percentages

*Failure to complete and submit 90% of homework will result in a failing grade in this class.*

Late work will result in a reduced grade. There will be no extra credit work.

Plagiarism will result in a grade of F for the class as well being referred to the Department Chair.

Grading

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<thead>
<tr>
<th>Grade</th>
<th>Overall Score</th>
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<tbody>
<tr>
<td>A+</td>
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<tr>
<td>A</td>
<td>94-97.99</td>
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<tr>
<td>A-</td>
<td>90-93.99</td>
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<td>85-89.99</td>
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<tr>
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<td>75-84.99</td>
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<td>D</td>
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University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate
and Undergraduate Programs’ Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/”
### EE181, Section 01, Fundamentals of Internetworking, Fall 2017, Course Schedule

*The schedule is subject to change with one week notice.*

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/23</td>
<td>Introduction to the class</td>
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<tr>
<td>2</td>
<td>8/28 8/30</td>
<td>Packet-Switched Networks Fundamentals</td>
<td>Ch.1</td>
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<tr>
<td>3</td>
<td>9/4 9/6</td>
<td><em>(Labor day – no class)</em> Packet-Switched Networks Fundamentals</td>
<td>Ch. 1</td>
</tr>
<tr>
<td>4</td>
<td>9/11 9/13</td>
<td>Networking Devices, Routers, and Physical Layer Devices</td>
<td>Ch. 2</td>
</tr>
<tr>
<td>5</td>
<td>9/18 9/20</td>
<td>Networking Devices, Routers, and Physical Layer Devices</td>
<td>Ch. 2</td>
</tr>
<tr>
<td>6</td>
<td>9/25 9/27</td>
<td>Links and Transmission Systems</td>
<td>Ch. 3</td>
</tr>
<tr>
<td>7</td>
<td>10/2 10/4</td>
<td>Links and Transmission Systems</td>
<td>Ch. 3</td>
</tr>
<tr>
<td>8</td>
<td>10/9 10/11*</td>
<td>Midterm Review <em>(closed-book, covering Ch. 1 - 3)</em></td>
<td>Ch. 1 - 3</td>
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<tr>
<td>9</td>
<td>10/16 10/18</td>
<td>Local Area Networks, and Networks of LANs Architecture</td>
<td>Ch. 4</td>
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<td>10</td>
<td>10/23 10/25</td>
<td>Local Area Networks, and Networks of LANs Architecture</td>
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<td>IP and Routing Protocols</td>
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<td>11/6 11/8</td>
<td>IP and Routing Protocols</td>
<td>Ch. 5</td>
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<td>11/13 11/15</td>
<td>Advanced Topics in Networks, TCP Technology</td>
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<td>11/20 11/22</td>
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<td>11/27 11/29</td>
<td>Advanced Topics in Networks, TCP Technology</td>
<td>Ch. 8</td>
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<tr>
<td>Week</td>
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<td>Topics</td>
<td>Readings</td>
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<tr>
<td>16</td>
<td>12/4</td>
<td>Advanced Topics in Networks, TCP Technology</td>
<td>Ch.8</td>
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<tr>
<td></td>
<td>12/6</td>
<td>Project Final Review</td>
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<td>17</td>
<td>12/16</td>
<td><strong>Final exam. (December 15th, Friday, 9:45 AM-12:00 PM)</strong></td>
<td><strong>All Chapters</strong></td>
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