San Jose State University **Computer Engineering Department**
CmpE 207 Section 3 **Network Programming and Application**
Instructor: Dr. Rod Fatoohi **Spring 2012**

Time & Location

Tuesday 6 – 8:45 pm, BBC 220 (or ENG 206 as needed).

Contact Information

Office Hours: Tuesday 3 – 6 pm, Wednesday & Thursday 5 – 6 pm, or by appointment.
Office: Eng 273.
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Email: rod.fatoohi@sjsu.edu
Answering phone calls & checking email are during office hours only.

Class Materials

Textbook

- Internetworking with TCP/IP Vol. 3, Client-Server programming and applications, Comer and Stevens, Linux/POSIX Sockets version, ISBN: 0-13-032071-4, 2001.

References

- UNIX Network Programming Vol. 1, 3/e: The Sockets Networking API, Stevens, Fenner & Rudoff, ISBN: 0-13-141155-1, 2004.
- UNIX Network Programming Vol. 1, 2/e: Networking APIs - Sockets and XTI, W. Stevens, ISBN: 0-13-490012-X, 1998.
- UNIX Network Programming, Vol. 2, 2/e: Interprocess Communications, W. Stevens, ISBN 0-13-081081-9, 1999.
- UNIX Network Programming, Stevens, ISBN: 0-13-949876-1, 1990.

Class eLearning Site

- Class website: http://sjsu.desire2learn.com
- Students are required to check the class website regularly.
- All reports (lab assignments and project) should be uploaded to the class website by the deadline posted; otherwise they will not be graded.
- The format of the reports should be acceptable to turnitin (such as WORD and PDF); otherwise the reports will not be graded.

Prerequisite

Required: CMPE 206 or instructor consent.

Highly Recommended:
- Basic Operating Systems Design Course (CmpE 142 or equivalent)
- Proficiency in C/C++
- Familiarity with UNIX/Linux

Exam & Grading

20% Project
20% Lab Assignments (five assignments, equally weighted)
25% Midterm: Tuesday, March 13 at 6 pm.
35% Final: Tuesday, May 22 at 5:15 pm.

Exams are multiple choices, open book & notes (Form T&E 0200 is required).
No laptops allowed in the exams.
No make-ups exams except in case of verifiable emergency circumstances.
No late submission for the project or lab assignments.

A+ : > 94	A : 90 - 94	A- : 85 - 89
B+ : 80 - 84	B : 75 - 79	B- : 70 - 74
C+ : 65 - 69	C : 60 - 64	C- : 55 - 59
D+ : 50 - 54	D : 45 - 49	D- : 40 - 44
F : < 40	(0.5 - 0.9) = 1	(0.1 - 0.4) = 0

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 members are required to report all infractions to the Office of Student Conduct and Ethical Development. The policy on academic integrity can be found at: http://www2.sjsu.edu/senate/S07-2.pdf
Students need to sign the Honesty Pledge form (required by the department), http://www.engr.sjsu.edu/fatoohi/honestyPledge.pdf

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.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html . Add/drop deadlines can be found on the current academic calendar web page located at http://www.sjsu.edu/academics. The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latedrops/policy/. Students should be aware of the current deadlines and penalties for dropping classes.
Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

Classroom Protocol

- Students should attend all meetings of the class.
- Students are responsible for lecture, book sections, lab assignment, project presentations, and any instructions given in the class.
- Avoid disturbing the class: turn-off cell phones (or put them on vibrate mode), no text messaging in the class or in the exams, avoid entering the class after being 10 minute late.
- Web browsing during the class is prohibited. Students are allowed to use computers for course related activities only. These activities include taking notes on the lecture underway, following the lecture on Web-based slides that the instructor has posted, and finding Web sites to which the instructor directs students at the time of the lecture.
- Students causing disruption in the class for other activities will be asked to leave the class and will be referred to the Judicial Affairs Officer of the University for disrupting the class after repeated offenses.

Collaboration Policy

- You can collaborate with your group members only. No collaboration or seeking information outside the group is allowed.
- You can use code from the textbooks listed above (and downloaded in our lab). Use of any other code from the Internet or any other source (even if you cite the reference) is prohibited and would violate the Academic Honesty Pledge.

Lab

To provide hands-on experience with network programming at different levels. Lab assignments include programming exercises in sockets, RPC, and network services.

- Exercises start from very simple client/server sessions to more advanced ones
- Report has a running code in our lab (or your own setup) that includes detailed comments, results, ...
- Lab reports (one report per group) are due in two weeks by the posted deadline – no late submission.

- Demo of the results should be expected with all group members present.
- Typically a group of two or three students works on a single assignment.
- Individual contribution should be stated in the report and grading could be based on contribution. Otherwise, equal contributions and responsibilities are assumed.
- You need to upload the report to D2L for every lab assignment.
- You need to get a lab account through https://unix.engr.sjsu.edu/wiki/doku.php, if you don't have one already (through other courses).

Project

Write a distributed airline reservation system that has many players including customers, airlines, and system administrators. You can use a socket based API only.

- Typically a group of two or three students works on the project.
- All participants are responsible for the project and should give a presentation and demo the project.
- The demo could be in our lab or your own setup.
- Project proposal includes design, API, methodology, features - due: April 3.
- Progress report includes some components implemented with demo - due: April 17.
- Final report includes running code and explanation of the design and implementation – due: May 8.
- Both the proposal and the progress report will be graded.
- You need to submit a soft copy only of the final report to the class website.

Course Description

Development and implementation of networking software for building distributed applications. Application Programming Interfaces: BSD Sockets, Winsock, Remote Procedure Call and Middleware. Network programming project.

Course Learning Objectives

- To gain hands on experience in designing, developing, and implementing networking software for building distributed applications.
- To obtain an understanding of the algorithms in designing client and server components of a distributed program.
- To have an ability to work collaboratively and communicate effectively with fellow engineers.

Outline

This is a tentative schedule (subject to change with fair notice):

Meeting	***Topic***	Date
1	Introduction	1/31
2	Overview of TCP/IP	2/7
3	API to communication protocols	2/14
4	Client & server SW designs	2/21
5	Pthreads	2/28
6	Concurrency in server, I/O Models	3/6
7	Midterm	3/13
8	Non-blocking I/O, socket options	3/20
9	Raw sockets, Winsock	4/3
10	XDR, RPC	4/10
11	RPC	4/17
12	RTP	4/24
13	Project presentations	5/1
14	Project Presentations	5/8
15	Project Presentations	5/15