Syllabus of CS3423.002: Systems Programming
Fall 2013

Time & Loc.:

  CS3423.002 Systems Programming, 3 hours credit, M-W-F 1pm -- 1:50pm, FLN 3.02.07*
  CS3421.003 Systems Programming Recitation, 1 hour credit, M 8am -- 8:50am, FLN 3.02.10A*
  CS3421.004 Systems Programming Recitation, 1 hour credit: W 9am -- 9:50am, FLN 3.02.10A*

Instructor:

  Palden Lama
  Office: FLN 4.01.52
  Email: palden.lama@utsa.edu
  Office Hours: MW 10:30 am – 12 noon

Course Description and Learning Objectives:

A study of systems-level programming in a specific system (Unix). Focus on concepts and tools to support the construction of systems programs. By the end of this course, you should be proficient at writing programs that take advantage of operating system support. For example, you will be able to write, compile, debug, and execute C programs that correctly use system interfaces provided by UNIX, create and manage processes, use files and I/O, achieve inter-process communication, concurrent processing with multiple threads, etc.

Textbook:

  Advanced Programming in the UNIX Environment
      by Stevens & Rago
  A Practical Guide to Linux
      by Sobell

Tentative Topics

- Unix System Overview
    - Unix and Shell Orientation

- Unix Software Distribution
    - diff, patch, shar, make

- Unix utilities
    - file, grep, find, sed, awk, perl,

- C programming tools
    - Gdb, ddd, gprof

- Unix System Programming
    - I/O review
    - File System Data Structures
    - Kernel Data Structures

- o Dup and dup2
- o Process Control
- o Interprocess Communication
- o Client/Server
- o Multi-threading
- o Popen/pclose

- Files and directories
  - o stat/fstat/lstat
  - o File Types/Macros
  - o File Access Permissions
  - o chmod/fchmod
  - o Reading Directories

Prerequisites

- CS 2213 Advanced Programming

Grading

The final grade will be composed of

- Class participation and attendance   3%
- Projects/Assignments/Quizzes   27%
- Two Midterms (in class, closed book)   35%
- Final (in class, closed book)   35% (Tue, Dec 17, 12:30 pm - 03:00 pm)

Grades will be assigned as follows:
- $90 \leq \{A\}$; $87 \leq \{A-\} < 90$
- $84 \leq \{B+\} < 87$; $80 \leq \{B\} < 84$; $75 \leq \{C+\} < 80$
- $70 \leq \{C\} < 75$; $65 \leq \{D+\} < 70$; $60 \leq \{D\} < 65$
- E/F: below 60

Note: I reserve the right to lower the grading scale if necessary to match the degree of difficulty of the tests.

Requirements and Course Expectations

- Class attendance is required to receive credit for participation. Students who are observing a religious holy day or are participating in a University-sanctioned event may be excused, when prior notice is given to the instructor.
- Students are strongly encouraged to provide course evaluation at the end of the semester. Feedback provided by students in the course evaluations will be used by professors to improve their teaching and it is used by the University as one factor in evaluating the instructor's effectiveness.
- Late homework/project submissions in general will only be accepted one additional week and, will be penalized 10%, except under non-academic circumstances, such as illness and

University-sanctioned events. In such cases, you have to provide sufficient proof, i.e., documents from the doctors.

- For FAIRNESS, no make-up examinations, except under extreme non-academic circumstances, such as illness. In such cases, you have to provide sufficient and convincing proof, i.e., documents from the doctors.

Other University Policies

- This syllabus is provided for informational purposes regarding the anticipated course content and schedule of this course. It is based upon the most recent information available on the date of its issuance and is as accurate and complete as possible. The instructor reserves the right to make any changes deemed necessary and/or appropriate. The instructor will make his or her best efforts to communicate any changes in the syllabus in a timely manner. Students are responsible for being aware of these changes.
- University wide policies and services regarding disabilities may be found online at: http://www.utsa.edu/disability/
- You are also responsible for knowing UTSA's policies regarding academic dishonesty. Plagiarism (see Section 203) will not be accepted. If you are in doubt be sure to make a proper citation to the author.
- Note: (a) Students are NOT automatically dropped from a class if they stop attending the class. (b) University policy does not permit visitors in a class. (c) University policy does not permit faculty or office staff to report grades by telephone, fax, or email.

Academic Support Services

I encourage you to utilize the Tomás Rivera Center's (TRC) academic support services for assistance in study strategies and course content. These services are available to you at no additional cost. For more information regarding these services, please visit the TRC web site at www.utsa.edu/trcss.

- Learning Assistance provides one-on-one study skills assistance through Academic Coaching and group study skills assistance through our Expert Learner Series Workshops. Call the office to schedule an Academic Coaching appointment at (210) 458-4694, visit the TRC web site for the Expert Learner Series schedule, or stop by MS 1.02.02.
- Supplemental Instruction (SI) offers student-led study groups using collaborative learning for historically difficult classes. Supported courses and schedules can be found on the TRC web site or check with your class SI Leader for details. You can call the SI office if you have questions or for more information at (210) 458-7251.
- Tutoring Services provides walk-in tutoring in a variety of subjects with several locations to choose from and the Math Assistance Program (MAP) for assistance in College Algebra and Pre-Calculus. Call (210) 458-6783 for more information or visit the TRC web site for tutoring schedules.
- If you are taking classes at the DT Campus, the TRC Downtown offers a variety of services to assist you. Stop by the TRC at the Downtown Campus in DB 2.114 or call (210) 458-2838.

The University of Texas at San Antonio Academic Honor Code

1. **Preamble**

   The University of Texas at San Antonio community of past, present and future students, faculty, staff, and administrators share a commitment to integrity and the ethical pursuit of knowledge. We honor the traditions of our university by conducting ourselves with a steadfast duty to honor, courage, and virtue in all matters both public and private. By choosing integrity and responsibility, we promote personal growth, success, and lifelong learning for the advancement of ourselves, our university, and our community.

2. **Honor Pledge**

   In support of the ideals of integrity, the students of the University of Texas at San Antonio pledge:

   "As a UTSA Roadrunner I live with honor and integrity."

3. **Shared responsibility**

   The University of Texas at San Antonio community shares the responsibility and commitment to integrity and the ethical pursuit of knowledge and adheres to the UTSA Honor Code.

The Roadrunner Creed

The University of Texas at San Antonio is a community of scholars, where integrity, excellence, inclusiveness, respect, collaboration, and innovation are fostered.

As a Roadrunner, I will:
- Uphold the highest standards of academic and personal integrity by practicing and expecting fair and ethical conduct;
- Respect and accept individual differences, recognizing the inherent dignity of each person;
- Contribute to campus life and the larger community through my active engagement; and
- Support the fearless exploration of dreams and ideas in the advancement of ingenuity, creativity, and discovery.
- Guided by these principles now and forever, I am a Roadrunner!