

CS 3424 Systems Programming Course Syllabus – Summer 2024

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CS 3424 Systems Programming

Summer 2024

COURSE INFORMATION

Course Description: *A study of systems-level programming in a specific system (at present, Linux). Focus on concepts and tools to support the construction of systems programs. The course includes 3 hours of lecture and a mandatory 1-hour recitation per week.*

COURSE OBJECTIVES AND OUTCOMES

A study of systems-level programming in Linux. Topics include shell programming, Unix Utilities (e.g., grep, find, sed, awk), regular expressions, Python programming, file I/O, process control, interprocess communication, and (as time permits) Unix sockets. Students will program with shell scripting tools, demonstrate the use of the Unix Utilities, program with Python, and program using low-level C via system calls.

Credit hours: 4

Prerequisites/co-requisites: CS 2124, CS 3424-AAT or CS 3424-ABT

Course Modality: Meets fully online at the scheduled time. *This is a **fully online synchronous course**. This means lectures will take place online only within the set time (similarly, the midterm and final exams will also be conducted live, in real-time, on Canvas, at our regularly scheduled meeting time). Work for this course must be completed in adherence to the due dates and deadlines as dictated by this syllabus as well as any specific instructions issued by the instructor.*

COURSE MATERIALS

Recommended Textbooks

- A Practical Guide to Linux: Commands, Editors, and Shell Programming – Sobell
- Advanced Programming in the Unix Environment – Stevens and Rago
- Programming in Python 3 – Summerfield

ACTIVITIES AND GRADING

Final grades will be based on the number of points you earn out of a possible 1000. Letter grades will be determined by the following breakdown of earned points. Extra credit opportunities on select assignments and exams are *sometimes* provided, though are by no means promised or guaranteed. Do not depend on such.

Activity	Quantity	Points Each	Total Points	Percentage
Assignments	5	90	450	45%
Quizzes	10	5	50	5%
Midterm Exam	1	200	200	20%
Final Exam	1	300	300	30%
Total Values	17		1000	100%

TABLE 1. BREAKDOWN OF THE NUMBER OF ACTIVITIES, POINTS FOR EACH, AND THE TOTAL POINTS AVAILABLE FOR EACH TYPE OF ACTIVITY.

There are 10 quizzes in this course. Make sure you complete as many as possible. Quizzes are tied to the recitation section and will be offered on an “at-most-one-per-week” basis. They will begin with the second week of classes, as recitation is not held during the first week, nor during the week of the midterm exam.

Final grades will be based on the following modified grading scale. Rounding up to the next highest letter grade is generally not performed unless the instructor is satisfied that the student has demonstrated sufficient comprehension commensurate with the target letter grade. This will happen automatically during the entering process; no solicitation is needed.

Grade Distribution and Letter Grade

Total Points	Percentage	Grade
967 – 1000	96.7 – 100%	A+
933 – 966	93.3 – 96.6%	A
900 – 933	90 – 93.3%	A-
867 – 900	86.7 – 90%	B+
833 – 866	83.3 – 86.6%	B
800 – 833	80 – 83.3%	B-
767 – 800	76.7 – 80%	C+
733 – 766	73.3 – 76.6%	C
700 – 733	70 – 73.3%	C-
667 – 700	66.7 – 70%	D+
633 – 666	63.3 – 66.6%	D
600 – 633	60 – 63.3%	D-
< 600	< 60%	F

TABLE 2. THE BREAKDOWN OF LETTER GRADES BY PERCENTAGE OF POINTS EARNED.

ESSENTIAL STUDENT INFORMATION

- **Important:** Bookmark and visit the [Common Syllabus Information webpage](#) to find important and valuable resources about counseling services, transitory/minor medical issues, supplemental instruction, tutoring services, academic success

coaching, sexual harassment and sexual misconduct, campus safety and emergency preparedness, inclusivity statement, and the Roadrunner Creed.

- For technical requirements, support, and academic resources, visit the [Student Support Gateway](#), where you can find all your tech and academic support resources in one place.
- Follow [Online Learning Netiquette](#) standards for your online communication activities. Please be mindful of the communication tools available in your course and use them for learning purposes. Class discussions take place in a respectful and safe environment, whether online or in person. UTSA encourages everyone to openly share their ideas and opinions without penalty or judgment, but learning should always be based on facts and research. It is possible to disagree without being disagreeable.
- UTSA provides reasonable accommodations to students via the [Student Disability Services](#). For more details on eligibility, policies, and requirements, please visit www.utsa.edu/disability or call (210) 458-4157.
- **UTSA Wellbeing Resources:** your wellbeing is a priority for us. UTSA is proud to partner with [Wellness 360](#) and [MySSP](#) to provide students with access to quality health and mental health care. Visit the [UTSA Students Wellbeing Resources](#) to explore the services available.

INSTRUCTOR CONTACT INFORMATION

Instructor Name: **Dr. Sam Silvestro**

Department and College: **Computer Science, College of Sciences**

Office Location: **NPB 3.336 (in-person meetings by appointment only)**

Student hours: **Mondays and Wednesdays, 2:30 – 3:45 PM via WebEx only**

See WebEx invitation here:

CS 3424-A1T – Summer 2024 Office Hours

Hosted by Sam Silvestro

<https://utsa.webex.com/utsa/j.php?MTID=md87e150f313f926b7c75bbec07ae9676>

Monday, June 3, 2024 2:30 PM | 1 hour 15 minutes | (UTC-05:00) Central Time (US & Canada)

Occurs every Monday, Wednesday effective 6/3/2024 until 8/7/2024 from 2:30 PM to 3:45 PM, (UTC-05:00) Central Time (US & Canada)

Meeting number: 2661 516 3008

Password: 59Qdn9RXNRR

Agenda: ***Dr. Silvestro's Summer 2024 office hours***

Join by video system

Dial 26615163008@utsa.webex.com

You can also dial 173.243.2.68 and enter your meeting number.

Join by phone

+1-415-655-0003 United States TOLL

Access code: 266 151 63008

Phone Numbers: 210-458-5542

Email Address: sam.silvestro@utsa.edu

COMMUNICATION PLAN

There are several ways you can communicate with me.

My preferred method of communication is:

- Email: you may email me at sam.silvestro@utsa.edu. Please try to avoid the “Send Email” tool in Canvas, as these are not always easy to identify and do not give me any information at-a-glance when I receive such notifications.
- Course Messages tool in Canvas: in case you need to send me a private message, specifically about a grade (as all other communication can take place via email). This communication stays on Canvas and is the only secure way to discuss your grade. You must log in to Canvas to send and receive a course message.

Due to simple practical constraints such as time and learning outcome, I generally do not provide support for troubleshooting your homework assignments via email. These lead to incredibly lengthy back-and-forth threads from which very little can be accomplished. Please utilize office hours for this purpose, where we can work one-on-one to examine and solve problems together in a fraction of the time.

ASSESSMENTS AND ASSIGNMENTS

Assn #	Topic	Due Date (11:59 PM)
A0	Unix Familiarity (zero points)	June 5
A1	bash	June 23
A2	sed	June 30
A3	awk	July 7
A4	Low-level File I/O	July 21
A5	Process Control / IPC	July 28

COURSE SCHEDULE

For a list of important university-wide dates, review [One Stop's academic calendar](#).

Topics Schedule

Topic: The Linux Shell, Shell Scripting (bash)

READ: SOBELL: CH 1, 4, 5, PG. 342-345

Topic: Shell Scripting (bash), continued; find and grep

READ: SOBELL: PGS. 342-345, 804-809, 833-837

Topic: sed, awk

READ: Sobell: Ch 14, 15

Topic: Python, part 1

READ: SUMMERFIELD: CH 1, 2, 3

Topic: Python, part 2

READ: SUMMERFIELD: CH 1, 2, 3

Topic: Python, part 3

READ: SUMMERFIELD: CH 1, 2, 3

Topic: File I/O (Binary)

READ: STEVENS: CH 3, 4, 5

Topic: File I/O (Low-Level)

READ: STEVENS: CH 3, 4, 5

Topic: Process Control

READ: STEVENS: CH 8, 9, 11, 12

Topic: Interprocess Communication

READ: STEVENS: CH 15 & 16

Exam Schedule

Midterm Exam: Wednesday, July 10th, 2024 @ 4 PM (Canvas)

Final Exam: Wednesday, August 7th, 2024 @ 4 PM (Canvas)

COURSE MANAGEMENT AND POLICIES

Student Code of Conduct and Scholastic Dishonesty

The Student Code of Conduct is Section B of the Appendices in the Student Information Bulletin. Scholastic Dishonesty is listed in the Student Code of Conduct (Sec. B of the Appendices) under [Sec. 203](#).

Announcements

All information you need for this course will be posted in Canvas in the syllabus or schedule, or as an assignment, item, or announcement. It is your responsibility to check in and participate every week in the course and complete all listed activities and assignments. It is recommended that you check announcements and your institutional email daily.

Submission of Coursework

All assignments are due at 11:59 PM (i.e., “end of day”) on the designated day unless otherwise noted. All assignments will be submitted online through the UTSA Canvas course site on or before the specified due date and submitted to the location designated in the assignment description. Make sure you save your assignment somewhere that you can easily retrieve it later (e.g., on a travel drive, your personal computer, email, etc.). If something goes wrong with your submission, you will want to be able to retrieve your assignment for resubmission. Always notify the instructor about any issues you encounter. *Blank, invalid, improperly formatted, unreadable, and/or incorrect submissions will not be granted a makeup, so please ensure you supply the correct file to the correct submission portal at the time of submission.* I recommend you immediately re-download your submission, copy it to an empty folder on the fox machine of your choice, and extract its contents to verify that it is the correct file set.

Be aware that Canvas goes down occasionally for maintenance, and you cannot gain access to the Canvas system or send documents during those times. It is always a good idea to submit assignments early to account for times Canvas might be offline or otherwise inaccessible to you. No provisions or allowances will be made for these situations except in very specific circumstances (e.g., Canvas is down for multiple hours on the evening in question).

Quality of Work

All work is expected to be of professional quality: neatly presented, syntactically correct, and free of logic or semantic errors (this is the goal, and is easier said than done, of course).

Very little partial credit is given for assignments (this will not necessarily be the case for exams). If a program does not produce the expected output, other programs that depend on it would not be able to parse what it produces. Therefore, if your program does not compile/run or if it does not produce the output as specified in the assignment description, you will receive little to no credit. You are being graded based on the

behavior / intended side-effects of your program, not the amount of time, effort, lines of code, etc. put forth during the endeavor.

You are strongly encouraged to visit me during office hours if you have questions about your assignment grades, and you should review them as soon as possible as they are posted.

Scholastic Dishonesty and Cheating

While students are encouraged to work with each other to understand and solve assignments, they must turn in their own work. Any submitted work found to be copied from another person (modified or not) will result in all students involved being reported to the university for scholastic dishonesty. Such referrals may occur at any time if the work was found to be copied. This includes after a grade has been assigned. You do not have any partners in this class; when in doubt, err on the side of asking permission to discuss details of assignments with classmates.

Grading and Feedback

To view your grades on Canvas, click on the “Grades” tab on the sidebar menu of our course in Canvas. If additional feedback has been included with your grade, a speech-bubble icon will appear next to your grade. Clicking on this icon will open an additional window on your screen providing you with feedback. You should generally expect about 1 week from the deadline of an assignment until you receive a grade. Unfortunately, this could vary due to a lack of graders and stretched grader hours this semester. Exams will generally be scored, and their answers released within 24 hours, provided there are no late takers who necessarily push that time period back.

Late Work

Late work is allowed for two days following the posted deadline of an assignment. Points will be deducted at a rate of 25 percentage points per day, including weekends and holidays. Work will not be accepted beyond this two-day grace period following the assigned due date. At that time, the grade will be recorded as a zero.

Incompletes

Course incompletes will be given only in extreme cases. If you feel you have extenuating circumstances that warrant an incomplete for the course, contact the instructor as soon as possible. Note that you *must* meet the guidelines for receiving an Incomplete, and this includes (but is not limited to), presenting passing marks in the class at the time of the request.

Copyright and Fair Use

It is important to understand the issue of intellectual property rights. You may not use the images or thoughts of others for profit or gain without their written permission. The UTSA library has a [Copyright Laws and Public Performance Rights](#) (PPR) page.

Students with Disabilities

The University of Texas at San Antonio, in compliance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act, provides “reasonable accommodations” to students with disabilities. Only those students who have officially registered with Student Disability Services and requested accommodations for this course will be eligible for disability accommodations. Instructors at UTSA must be provided official notification of accommodation through Student Disability Services. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.utsa.edu/disability or by calling Student Disability Services at (210) 458-4157. Accommodations are not retroactive.

Family Educational Rights and Privacy Act (FERPA)

FERPA grants students the right to control certain disclosures of their educational records. For a full explanation of your rights and to grant access to FERPA educational records, go to [Student Catalog Annual FERPA Letter](#) and [One Stop Enrollment – FERPA Proxy Access](#). Without your consent or authorization of proxy access, UTSA may release [Directory Information](#), such as but not limited to your name, email, phone, place of birth, and photograph, unless you have opted out of the release of Directory Information. To opt out, go to [Restrict Directory Information Form](#). ***Mandatory Reporting of Sexual Misconduct and Reporting of Health and Safety Information:*** If a student discloses an incident of sexual misconduct to any UTSA employee (other than to a designated confidential employee such as mental health counselor or PEACE advocate, a UTSA police officer using a pseudonym form or at a public awareness event), that information is not confidential, and the UTSA employee must report all known information to the UTSA Office of Equal Opportunity Services. Employees may also report any concerns about the health and safety of students or others to other school officials and/or law enforcement. For a complete list of exceptions to FERPA, please see [Student Catalog Annual FERPA Letter](#) and [HOP 5.01](#).

Video and audio recording

As the instructor of this course, I may record meetings and lessons. You are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Recordings may not be published, reproduced, or shared with those not in the class. If the instructor or a UTSA office plans any other uses for the recordings, consent of the students identifiable in the recordings is required before such use unless an exception is allowed by law. For more information on your privacy and class recordings, review [Student Privacy \(FERPA\) in Virtual Classrooms and Other Educational Recordings](#) and the [Guide to Secure Video Conferencing Tools](#).

Note: The syllabus is subject to change at the instructor’s discretion. Any changes/corrections to the course materials, assignment dates, or other updates will be communicated to the students ahead of time. You are responsible for checking Canvas for corrections or updates to the syllabus.