

# CS361S: Computer Security and Privacy

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## 1. Course Contact

Dr. Shravan Narayan

**Classes:** 12:30pm to 2pm at JGB 2.218 on Tuesday, Thursday

**Canvas:** <https://utexas.instructure.com/courses/1421761>

**Office Hours:** At GDC 6.430, 1:30pm to 2:30pm on Wednesday and 2pm to 3pm on Thursday.

(Emailing to let me know you're coming helps. Also email me if you need alternate meeting times)

**Email:** [shr@cs.utexas.edu](mailto:shr@cs.utexas.edu) (Expect a response within 48 hours)

**TA:** Darius Grassi [dwg@utexas.edu](mailto:dwg@utexas.edu) (Always cc [shr@cs.utexas.edu](mailto:shr@cs.utexas.edu))

**TA office hours:** 1:00-2:00 pm every Friday (and Mondays on assignment weeks), GDC room 6.416

(Syllabus last updated: Aug 25<sup>th</sup>, 2025)

## 2. Course requirements

The formal prerequisite for CS 361S is CS 439 (or 352 or 372) or CS 439H (or 352H or 372H).

At a minimum, students are expected to have knowledge of programming with C, compiling C applications, the memory layout of C applications including stack and heap, as well as standard terms and operations from programming and compilation such as how control flow (branches, indirect function calls) work, what a program counter does etc. Comfort using Linux/UNIX tools, terminals, ssh, debugging tools is also expected. Finally, a basic understanding of computer architecture and at least one CPU ISA (x86, ARM, RISC-V) is expected.

## 3. Class attendance

The class will use a combination of slides, notes on whiteboard and live demonstrations. The slides will be made available, but you will have to take notes for whiteboard or live demonstrations. We may consider opening the collaborative class notes option on Canvas if there is enough interest for this.

If you are unable to attend some classes, it will be your responsibility to talk to your classmates to catch up with notes etc. You are always welcome to clarify your understanding of material you missed or haven't understood in the office hours.

If you have another class that conflicts with any part of this class, or if you think you cannot attend this class regularly, you should not take this class.

## 4. Lecture recordings

This class will not be recorded, so attending class regularly will be necessary to keep up with the material, as well as participate in the in-class written quizzes etc.

While there are no currently plans to record this class, this may change. Class recordings, if provided, are reserved only for students in this class for educational purposes and are protected under FERPA. The

recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings.

## 5. Grading

The grading scheme is as follows:

- Perusall readings – 10%
- Assignments (4 to 7) – 35%
- Midterm – 25%
- Final exam – 30%

Each of these are explained below.

## 6. Perusall

We will be using perusal to assign class readings. This may be used to also ask you to comment on the readings or answer questions. There will be one or two readings every week. The expectation is that you will be able to commit time every week to do some of the readings.

## 7. Assignments

There will be between 4 to 7 assignments. The first assignment is easier and may not count as much as the other assignments towards the overall grade.

You have two late days that you may use to turn in work past the deadline over the entire semester. A late day is a contiguous 24-hour period starting at the assignment due time. Use of partial late days are always rounded up to the next full day. These late days are intended to cover your extension needs for usual circumstances: brief illness, busy with other classes, interviews, travel, extracurricular conflicts, and so on. You do not need to ask permission to use a late day

Assignments maybe assigned as individual assignments or for groups of 2. If you use late days on group assignments, both you and your partner will be charged for every late day that you use, and you both must have late days to use them.

## 8. Midterm and final exam

This course will have both a midterm and a final exam. There will be no makeup exams except for UT-authorized excuses.

## 9. Policy on Academic Accommodations

The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodation please contact Disability and Access (D&A). Please refer to D&A's website for contact and more information:

<http://diversity.utexas.edu/disability/>. If you are already registered with D&A , please deliver your

Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodation and needs in this course.

## 10. Academic Integrity

Recall the Student Honor Code: “As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity.”

Students who violate University rules on academic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on academic dishonesty will be strictly enforced. For further information, please visit the [Student Conduct and Academic Integrity Website](#).

To detect instances of academic integrity violations in programming assignments we may use 3rd party software.

## 11. Artificial intelligence

The use of artificial intelligence tools (such as ChatGPT) as “assignments solvers” in this class is strictly prohibited. Any use of AI tools detected will always be reported as an attempt to cheat and an official violation of course policy. Use of AI tools as “search engines” is permitted.

## 12. Religious holy days

Religion (or lack thereof) is an important part of who we are. If a holy day observed by your religion falls during the semester and you require accommodation due to that, please let me know as soon as possible. Email is an acceptable form of communication. To guarantee accommodation around presentations or other big deadlines, I will need notice of at least two weeks. If you are unable (or forget!) to provide that notice, please contact me anyway in case I can still accommodate you.

**University-required language:** A student who is absent from an examination or cannot meet an assignment deadline due to the observance of a religious holy day may take the exam on an alternate day or submit the assignment up to 24 hours late without penalty, ONLY if proper notice of the planned absence has been given. Notice must be given at least 14 days prior to the classes which will be missed. For religious holy days that fall within the first two weeks of the semester, notice should be given on the first day of the semester. Notice must be personally delivered to the instructor and signed and dated by the instructor, or sent certified mail. Email notification will be accepted if received, but a student submitting email notification must receive email confirmation from the instructor.

## 13. Class Calendar

The course calendar is here to give you an idea. It is subject to change depending on how quickly we progress through the material. We may add, remove or replace material based on interest.

**Note: The dates for the last two assignment dates and details of readings for later classes will be posted shortly.**

|             | Theme   | Class Contents  |
|-------------|---|---|
| Tue, Aug 26 |   | No class today  |
| Thu, Aug 28 | History of Systems Security. Buffer overflow attacks. | <b>Readings:</b><br><a href="#">Smashing the Stack for Fun and Profit - Aleph One (1996) – reformatted in 2017</a><br><br><b>Extra Resources:</b> 30.1 to 30.2.1<br><a href="#">Low-Level Software Security by Example - Úlfar Erlingsson, Yves Younan, and Frank Piessens (2010)</a><br><br><a href="#">E.H. Spafford: “The Internet Worm Program: An Analysis” (1988)</a> |
| Tue, Sep 2  |   | <b>Assignment 1 available (GDB).</b><br><br>Revisiting GDB usage. Integer overflows, format string bugs etc.<br><br>Quick demo on GDB usage.<br><br><b>Readings:</b><br><a href="#">Exploiting Format String Vulnerabilities – scut (2001)</a>  |
| Thu, Sep 4  | Legacy mitigations for memory safety                  | <b>Readings:</b><br><a href="#">V. van der Veen, N. dutt-Sharma, L. Cavallaro, and H. Bos: “Memory Errors: The Past, the Present, and the Future” (2012)</a>  |
| Tue, Sep 9  |   | <b>Assignment 1 due. Assignment 2 available (Buffer overflows).</b>   |
| Thu, Sep 11 |   |   |
| Tue, Sep 16 | Isolation   |   |
| Thu, Sep 18 |   |   |
| Tue, Sep 23 | Web Security  | <b>Assignment 2 due. Assignment 3 available.</b>  |
| Thu, Sep 25 |   |   |
| Tue, Sep 30 | Network Security                                      |   |
| Thu, Oct 2  |   |   |
| Tue, Oct 7  |   |   |
| Thu, Oct 9  |   |   |
| Tue, Oct 14 |   |   |
| Thu, Oct 16 | No class today  | No class today  |
| Tue, Oct 21 | Midterm today   | Midterm today   |
| Thu, Oct 23 | Side-channels & Micro-architectural security          |   |

|                    |                        |                                      |
|--------------------|------------------------|--------------------------------------|
| <b>Tue, Oct 28</b> |                        |                                      |
| <b>Thu, Oct 30</b> |                        |                                      |
| <b>Tue, Nov 4</b>  |                        |                                      |
| <b>Thu, Nov 6</b>  |                        |                                      |
| <b>Tue, Nov 11</b> |                        |                                      |
| <b>Thu, Nov 13</b> |                        |                                      |
| <b>Tue, Nov 18</b> |                        |                                      |
| <b>Thu, Nov 20</b> | Cryptographic Security |                                      |
| <b>Tue, Nov 25</b> |                        | <b>No class today (Thanksgiving)</b> |
| <b>Thu, Nov 27</b> |                        | <b>No class today (Thanksgiving)</b> |
| <b>Tue, Dec 2</b>  |                        |                                      |
| <b>Thu, Dec 4</b>  |                        |                                      |