SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Information Security

CS 166

Fall 2025 In Person 3 Unit(s) 08/20/2025 to 12/08/2025 Modified 08/19/2025

Course Information

Class time	Section 4: T/Th 12:00 - 13:15 Section 5: T/Th 13:30 - 14:45
Classroom*	MacQuarrie Hall 324
Instructor	Yan Chen (yan.chen01@sjsu.edu)
Office Hour	T/Th 15:00 - 16:00 on Zoom (https://sjsu.zoom.us/j/81291608336) Or Make an Appointment (https://scheduler.zoom.us/yan-chen-rurbn3/fa25)
Grader	Amir Marashifar <amirali.marashifar@sjsu.edu (mailto:amirali.marashifar@sjsu.edu)>

*The class is in-person. The lecture part will be recorded but the quality is not guaranteed. Some in-class demos and exercises may not be recorded.

Course Description and Requisites

Fundamental security topics including cryptography, authentication, access control, network security, security protocols, and software security. Networking basics are covered. Additional security topics selected from multilevel security, biometrics, blockchain, machine learning, information warfare, e-commerce, intrusion detection, system evaluation and assurance.

Prerequisite(s): CS 146 (with a grade of "C-" or better) and either CS 47 or CMPE 102 or CMPE 120 (with a grade of "C-" or better); Computer Science, Applied and Computational Math, Forensic Science: Digital Evidence, or Software Engineering Majors only; or instructor consent.

Letter Graded

Classroom Protocols

- Do NOT share any course material publicly (on Canvas, GitHub, etc.) without permission, including but not limited to lecture notes, lecture videos, passwords, homework/exam solutions, and class links.
- No late homework questions (within 24 hours before the due, excluding follow-ups) via email.
- **Instances of academic dishonesty will not be tolerated.** Your own commitment to learning, as evidenced by your enrollment at San José State University and the University's Academic Integrity Policy (https://www.sjsu.edu/senate/docs/F15-7.pdf), requires you to be honest in all your academic coursework. Cheating or plagiarism (presenting the work of another as your own, the use of another person's ideas without giving proper credit, or using AI) will result in a reduction in the final course grade (you will get a warning if it's the first time except for midterm 2 and final; 1 letter grade off every time after) and administrative sanctions by the University.

Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

Course Learning Outcomes (CLOs)

After completing this course, you should be knowledgeable of the major technical security challenges in each of the following four areas: cryptography, access control, protocols, and software.

Course Materials

There is no required text for this course other than all the materials (lecture notes, homework, etc.) on the Canvas (https://sjsu.instructure.com/courses/1614462). You are responsible for **regularly checking the Canvas course page** for any updates, including its messaging system.

Further Readings (optional)

- Mark Stamp, "Information Security: Principles and Practice," 3rd edition
- Michael Sikorski and Andrew Honig, "Practical Malware Analysis: The Hands-On Guide to Dissecting Malicious Software." An excellent book for information on reverse engineering that includes many hands-on exercises.
- Software Reverse Engineering (http://reversingproject.info/). This website, which was created by a former master's student, includes lots of good information and detailed exercises with solutions.
- The references at the end of each lecture note.

Course Requirements and Assignments

There will be 5 biweekly assignments (optional), 2 programming assignments (optional), 2 midterms (optional), and a final (mandatory). All activities are individual assignments unless specified. **Copying from others' work (from other students, the Internet, or AI) will be considered cheating**. And **no late submission will be accepted**.

Although assignments and quizzes are optional, they are highly recommended to practice what you learned in class and to enhance your score. University Policy S16-9 (http://www.sjsu.edu/senate/docs/S16-9.pdf) states that:

> *"Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course-related activities, including but not limited to internships, labs, and clinical practice. Other course structures will have equivalent workload expectations as described in the syllabus."*

Canvas Quiz: Biweekly Assignments

There will be 1 assignment every 2 weeks (covering 4 lectures). Assignments will be posted on Canvas as untimed quizzes, **locked by passwords that are ONLY given in the lectures**. Start early so you have time to ask questions if you need help.

Programming Assignments

There will be 2 programming assignments, each including 2 ~ 3 programming problems (in any programming language of your choice). You can choose to work in a group of up to 3. **Cite the source if you use any pre-written packages or it will be considered cheating**. More details about the submission will be given in class.

Canvas Quiz: Midterms

There will be 2 midterms, the first one will focus on the first two topics (crypto & software) and the second will focus on the last two topics (access control & protocols). They will be posted on Canvas as timed quizzes. They are online; you can take them anywhere but must **during the required time frame** (tentative: October 9 and November 20). Exceptions may ONLY be given in cases of a verifiable emergency. You can view the midterms as practices for the final.

Canvas Quiz: Final Examination

The final will be in the same format as the midterms, but it is cumulative. The date and time are fixed (follows Section 5's time): **Tuesday, December 16, 13:00 - 15:00 Pacific Time**. You can pick an earlier time with a verifiable reason. Exceptions may ONLY be given in cases of a verifiable emergency.

It can be substituted with the sum of the midterm scores. More details will be given in class.

Both Midterms and the Final are closed-all-materials.

The final Exam is mandatory as University policy S17-1 (http://www.sjsu.edu/senate/docs/S17-1.pdf) states:

"Faculty members are required to have a culminating activity for their courses, which can include a final examination, a final research paper or project, a final creative work or performance, a final portfolio of work, or other appropriate assignments."

✔ Grading Information

Criteria

Note that the "weight" is not percentage - they are "points". There will be at least 130 points available, including extra credits from optional exercises/activities. More details will be given in class.

Type	Weight	Topic	Notes
Final Exam	100	Cumulative	Can be substituted with the sum of midterm scores
(Optional) Assignments	15	Biweekly	5 assignments total, 3 pts each
(Optional) Programs	6	Cumulative	2 program assignments total, 3 pts each
(Optional) Midterms	6	Cumulative	2 midterms, 3 pts each if grade over 50% (all-or-nothing)
(Optional) Others	3+	Others	Other class activities, such as reading assignments, discussions, etc.

Breakdown

The range also refers to "points", not percentages.

- A+ will be given to the top 1% of students.
- Grades near the borderlines will be rounded up depending on your level and quality of class participation (in class and in the Discussions on Canvas).
- The grade might be curved ONLY if the final grades of the class at the end of the semester are not normal.

Grade	Points	Grade	Points	Grade	Points
A	Above 93.00	B minus	80.00 to 82.99	D plus	66.00 to 69.99
A minus	90.00 to 92.99	C plus	76.00 to 79.99	D	63.00 to 65.99

B plus	86.00 to 89.99	C	73.00 to 75.99	D minus	60.00 to 62.99
B	83.00 to 85.99	C minus	70.00 to 72.99	F	Below 59.99

University Policies

Per University Policy S16-9 (PDF) (http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the Syllabus Information (https://www.sjsu.edu/curriculum/courses/syllabus-info.php) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

Important Dates

Visit the Fall 2025 Registrar Calendar (https://www.sjsu.edu/registrar/calendar/fall-2025.php) for more details.

Date	Description
Aug. 21, Thursday	First Day of instruction (for this class)
Sep. 16, Tuesday	**Last day to drop without a W grade**
	Last day to add classes via MySJSU
Nov. 2, Sunday	Daylight saving time ends (2 AM -> 1 AM)
Nov. 15, Monday	Last day to late drop/withdraw
Dec. 4, Thursday	Last day of instruction (for this class)
Dec. 8, Monday	All class activities are due except for the final (for this class)
Dec. 16, Tuesday	**Final Exam (for this class) 13:00 - 15:00 Pacific Time** * can pick an earlier time
Dec. 20, Saturday	Grades (should be) viewable on MySJSU

Lecture Schedule

The lecture schedule below is tentative and subject to change with fair notice.

Week	Date	Topic	Covers
Week 0 - 4	Aug. 21 - Sep. 18	Crypto	Classic Ciphers Stream Ciphers Block Ciphers Public Key Crypto Hash Functions
Week 5 - 6	Sep. 23 - Oct. 2	Software	Software Flaws Malware SRE Other Attacks
Week 7	Oct. 7, Oct. 9	Midterm 1 Review & Midterm 2	Crypto & Software
Week 8 - 9	Oct. 14 - Oct. 23	Authentication	Authentication Authorization
Week 10 - 12	Oct. 28 - Nov. 13	Protocol	Conceptual Protocols Real-world Protocols Network Protocols
Week 13	Nov. 18, Nov. 20	Midterm 2 Review & Midterm 2	Authentication & Protocol
Week 14 - 15	Nov. 25 - Dec. 2	Machine Learning in Information Security	HMM Fraud Detection
Week 15	Dec. 4, Dec. 16	Final Exam Review & Final Exam	First 4 Topics

A detailed schedule is posted on [Canvas (https://sjsu.instructure.com/courses/1614462/pages/course-materials)](https://sjsu.instructure.com/courses/1614462/pages/course-materials).