

San José State University
Department of Computer Science
CS 166, Information Security, Section 3, Spring, 2016

Course and Contact Information

Instructor: Prakash Atawale

Office Location: DH 282

Telephone:

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Office Hours: Thursdays: 4:15pm-5.30pm

Class Days/Time: Tuesdays and Thursdays 3.00pm to 4.15pm

Classroom: MH 235

Prerequisites: 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), or instructor consent. Ability to code basic Java program is required.

Course Format

Wireless laptop with fully charged battery that can last for 1.5 hours is required.

Student should have administrator access to the laptop.

Fully functioning Java Development Kit must be installed on the laptop.

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on my faculty web page at <http://www.sjsu.edu/people/prakash.atawale> and/or on the Canvas learning management system course website. You are responsible for regularly checking with the messaging system through MySJSU to learn of any updates.

Course Description

Fundamental information security topics including cryptography, protocols, passwords, access control, software security, and network security. Additional topics selected from multilevel security, biometrics, tamper-resistant hardware, information warfare, e-commerce, system evaluation and assurance, intrusion detection, and Java Cryptography Architecture.

Course Learning Outcomes

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.

Other Readings

- Java Cryptography Architecture reference guide. This is the official documentation from Oracle. Information provided here will be useful to complete the coding assignments.
<https://docs.oracle.com/javase/7/docs/technotes/guides/security/crypto/CryptoSpec.html>
- Java tutorial, security trail: <https://docs.oracle.com/javase/tutorial/security/index.html>
- *A Bug Hunter's Diary: A Guided Tour through the Wilds of Software Security*, Tobias Klein, No Starch Press, 2011. Lots of interesting real-world examples of vulnerable code.
- [Software Reverse Engineering \(SRE\)](#) website. This website, which was created by a former master's student, includes lots of good information and detailed exercises with solutions.
- *Security Engineering: A Guide to Building Dependable Distributed Systems*, Ross Anderson, John Wiley & Sons, Inc., 2001, ISBN: 0-471-38922-6; see Ross Anderson's *Security Engineering* website <http://www.cl.cam.ac.uk/~rja14/book.html>, where you can obtain a free (and legal) copy of the 1st edition of the book. This is an excellent book for an overview of security in general, but it is not too focused or technically detailed.
- OWASP Top 10: powerful awareness document for web application security. The OWASP Top Ten represents a broad consensus about what the most critical web application security flaws are.
https://www.owasp.org/index.php/Category:OWASP_Top_Ten_Project
- *Computer Viruses and Malware*, John Ayccock, Springer, 2006, ISBN: 0387302360. This book gives a good introduction to research topics related to malware. The book is well-written and surprisingly easy reading, given the technical nature of the material.

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in [University Policy S12-3](#) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

This course requires you to complete tests, coding projects, weekly homework assignments, classroom assignments, quizzes and a final examination.

NOTE that [University policy F69-24](#) at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

Grading Policy

1. Midterm test, 100 points
2. Homework (10): 100 points
3. Quizzes, class participation, and other work as assigned, 50 points.
4. Project: 50 points.
5. Final, 100 points.
6. Semester grade will be computed based on the percentage of the points earned.
7. *No* make-up tests or quizzes will be given and *no* late homework (or other work) will be accepted. Also, in-class work must be completed in the section that you are enrolled in.
8. Nominal Grading Scale:

Percentage	Grade
92 and above	A
90 - 91	A-
88 - 89	B+
82 - 87	B
80 - 81	B-
78 - 79	C+
72 - 77	C
70 - 71	C-
68 - 69	D+
62 - 67	D
60 - 61	D-
59 and below	F

- **Homework:** Homework is due *typewritten* (include source code, but not executable files) by class starting time on the due date. Each assigned problem requires a solution and an explanation (or work) detailing how you arrived at your solution. Cite any outside sources used to solve a problem. When grading an assignment, I may ask for additional information. A *subset* of the assigned problems will be graded. Exact mechanism for submitting digital content will be communicated at the time homework is assigned.
- **Project:** Your project will dive deep into one of the topics you learn in this class. You are required to create original work related to your chosen information security topic. Coding, preferably using Java, is expected as a component of the project. Points will be based on the completed features, and achieved milestones, design documents, test cases created and other artifacts produced.

Note that “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See [University Policy F13-1](http://www.sjsu.edu/senate/docs/F13-1.pdf) at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

Classroom Protocol

I expect every student to be exemplary. Learn, and let others learn. Constructive participation and discussions are allowed.

University Policies

General Expectations, Rights and Responsibilities of the Student

As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU’s policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arise. See [University Policy S90–5](http://www.sjsu.edu/senate/docs/S90-5.pdf) at <http://www.sjsu.edu/senate/docs/S90-5.pdf>. More detailed information on a variety of related topics is available in the [SJSU catalog](http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html), at <http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html>. In general, it is recommended that students begin by seeking clarification or discussing

concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

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](http://info.sjsu.edu/static/catalog/policies.html) section at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines can be found on the current academic year calendars document on the [Academic Calendars webpage](http://www.sjsu.edu/provost/services/academic_calendars/) at http://www.sjsu.edu/provost/services/academic_calendars/. The [Late Drop Policy](http://www.sjsu.edu/aars/policies/latedrops/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](http://www.sjsu.edu/advising/) at <http://www.sjsu.edu/advising/>.

Consent for Recording of Class and Public Sharing of Instructor Material

[University Policy S12-7](http://www.sjsu.edu/senate/docs/S12-7.pdf), <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course and the following items to be included in the syllabus:

- “Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”
 - It is suggested that the green sheet include the instructor's process for granting permission, whether in writing or orally and whether for the whole semester or on a class by class basis.
 - In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.
- “Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.”

Academic integrity

Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy S07-2](http://www.sjsu.edu/senate/docs/S07-2.pdf) at <http://www.sjsu.edu/senate/docs/S07-2.pdf> 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 [Student Conduct and Ethical Development website](http://www.sjsu.edu/studentconduct/) is available at <http://www.sjsu.edu/studentconduct/>.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make 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](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the [Accessible Education Center](http://www.sjsu.edu/aec) (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

CS 166 / Information Security, Section 3, spring 2016, Course Schedule

Schedule is subject to change with fair notice. Notice will be made available in class and via email.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1		
1	1/28/16	Class information, Introduction.
2	2/2/16	Cryptography
2	2/4/16	Cryptography, HW1 due.
3	2/9/16	Cryptography.
3	2/11/16	Cryptography, HW2 due.
4	2/16/16	Cryptography.
4	2/18/16	Cryptography, HW3 due.
5	2/23/16	Access control
5	2/25/16	Access control, HW4 due.
6	3/1/16	Access control
6	3/3/16	Access control, HW5 due.
7	3/8/16	Access control
7	3/10/16	Midterm: cryptography and access control
8	3/15/16	Protocols.
8	3/17/16	Protocols, HW6 due.
9	3/22/16	Protocols
9	3/24/16	Protocols, HW7 due.
10	4/5/16	Protocols
10	4/7/16	Protocols, HW8 due.
11	4/12/16	Software
11	4/14/16	Software, HW9 due.
12	4/19/16	Software
12	4/21/16	Software, HW10 due.
13	4/26/16	Software
13	4/28/16	Project
14	5/3/16	Project
14	5/5/16	Project

Week	Date	Topics, Readings, Assignments, Deadlines
15	5/10/16	Project
15	5/12/16	Review, conclusion
Final Exam	5/23/16	MH 235, 12:15pm -2:30pm. The official finals schedule is here: http://info.sjsu.edu/static/catalog/final-exam-schedule-spring.html