San José State University
Computer Science
CS 166, Information Security, Section 03, Spring, 2017

Course and Contact Information

Instructor: Anna Shaverdian

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Office Hours: Monday and Wednesday 5-6

Class Days/Time: Monday and Wednesday 6-7:15pm

Classroom: DH 351

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.

Course Description

Fundamental 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, and intrusion detection.

Course Learning Outcomes (CLO) (Required)

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.

Required Texts/Readings

Textbook

Textbook: We will use a manuscript that will eventually become the 3rd edition of the textbook ***Information Security: Principles and Practice***, Mark Stamp

Other Readings

- ***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.
- ***Practical Malware Analysis: The Hands-On Guide to Dissecting Malicious Software***, Michael Sikorski and Andrew Honig, No Starch Press, 2012. An excellent book for information on reverse engineering (whether for malware analysis or other purposes). Includes many hands-on exercises.
- Software Reverse Engineering (SRE) (Links to an external site.) at http://reversingproject.info/. This website, which was created by a former masters student, includes lots of good information and detailed exercises with solutions.
- ***Network Security: Private Communication in a Public World***, second edition, Charlie Kaufman, Radia Perlman, and Mike Speciner, Prentice Hall, 2002, ISBN: 0-13-046019-2. This book provides good coverage of cryptography and excellent coverage of several security protocols.
- ***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* (Links to an external site.) at 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.
- ***Security in Computing***, third edition, Charles P. Pfleeger and Shari Lawrence Pfleeger, Prentice Hall, 2003, ISBN: 0-13-035548-8. The strength of this book is its coverage of the security issues related to software. In particular, operating systems and some aspects of secure software engineering are covered well. This book also has some good, basic information on viruses.
- ***Applied Cryptography: Protocols, Algorithms and Source Code in C***, second edition, Bruce Schneier, John Wiley & Sons, Inc., 1995, ISBN: 0-471-11709-9. For better or for worse, in industry, this is *the* standard reference for all things cryptographic.
- ***Counter Hack Reloaded: A Step-by-Step Guide to Computer Attacks and Effective Defenses***, Ed Skoudis with Tom Liston, Prentice Hall, 2006, ISBN: 0-13-148104-5. There are many books that claim to provide information on how to foil hackers, but this is by far the best that I have seen. This is an updated version of the original ***Counter Hack***, published in 2001.
- ***Computer Viruses and Malware***, John Aycock, 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.
- Additional relevant material:

- Previous semester lecture videos are available on You Tube (Links to an external site.) at http://www.youtube.com/playlist?list=PLQEAKfSI2JLOzrgaQOgF6S3PqXs2zR614
- Class-related discussion will be posted on Piazza. You are strongly encouraged to participate by asking questions, as well as by responding to questions that other students ask. At the start of the semester, you should receive an email asking you to join this discussion group—if not, contact your instructor via email.

Course Requirements and Assignments

- 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 typically be graded.
- Zip your homework into a file and submit it on canvas.
- NOTE that University policy F69-24 (Links to an external site.) 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."

Final Examination or Evaluation

Monday, May 22	1715-1930

Grading Information (Required)

- Test 1, 100 points Date: TBD
- Test 2, 100 points Date: TBD
- Homework, quizzes, class participation, and other work as assigned, 100 points.
- Final, 100 points
- Semester grade will be computed as a weighted average of the 4 major scores listed above.
- ***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.
- 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

More guidelines on grading information and class attendance can be found from the following two university policies:

- *University Syllabus Policy S16-9 (http://www.sjsu.edu/senate/docs/S16-9.pdf)*
- *University policy F15-12 (http://www.sjsu.edu/senate/docs/F15-12.pdf)*

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/

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Schedule is subject to change.

Course Schedule

Week	Topics, Readings, Assignments, Deadlines
1	Introduction
2	Cryptography
3	Cryptography
4	Cryptography
5	Cryptography
6	Cryptography

7	Protocols
8	Protocols
9	Protocols
10	Protocols
11	Access Controls
12	Access Controls
13	Access Controls
14	Software
15	Software