

General information

Section: 001, Credit hours: 3, Prereq: Graduate standing

Class meetings: MW 2:00-3:15pm in CIS 3064

Instructor: Jay Ligatti (ligatti@cse.usf.edu), Office hours: MW 3:30-5pm in ENB 333

Teaching Assistant: Parisa Momeni (parisamomeni@usf.edu)

TA office hours: Email for an online or in-person appointment

TA duties include: Helping with grading and answering student questions

Course description: Introduction to research in foundations of software security. Basic static and dynamic enforcement of security policies. Roles and meanings of policies, properties, mechanisms, and enforcement. Language-based security and tools for specifying security. **Student outcomes:** Students having successfully completed this course will obtain a breadth of knowledge in the foundations of software security by reading a selection of research papers in the area and will obtain a depth of knowledge by performing independent research in the area.

Course materials: All readings will be from papers available online or handed out in class. Please check the course website (<http://www.cse.usf.edu/~ligatti/foss/24>) regularly for announcements, links to reading material, and an up-to-date schedule. Grades will be posted on Canvas (<http://my.usf.edu/>).

Tentative schedule—test dates are unlikely to change; topics are likely to change

<u>Week</u>	<u>Dates</u>	<u>Topics</u>
1	01/08, 01/10	Introduction and definitions; enforceability theory
2	01/17	Research publications
3	01/22, 01/24	Enforceability theory
4	01/29, 01/31	Enforceability theory; Policy specification and composition
5	02/05, 02/07	Policy specification and visualization
6	02/12, 02/14	Test 1 ; Firewalls
7	02/19, 02/21	Authentication
8	02/26, 02/28	Vulnerability trends; Buffer overflows
9	03/04, 03/06	Code and noncode injection attacks
10	03/18, 03/20	Test 2* ; Injection attacks
11	03/25, 03/27	Injection attacks
12	04/01, 04/03	CFI
13	04/08, 04/10	Noninterference and information flow
14	04/15, 04/17	Usable security
15	04/22, 04/24	Trustworthiness; Backdoors

Test 3 (Final Exam)*, 04/29 (Monday), 12:30-2:30pm

***All tests are cumulative**

Final-grade breakdown:

42% Tests 1-2 (21% each)

33% Test 3 (Final exam)

25% Research paper, due at the beginning of class on 04/24

Class meetings and tests: Most class meetings will be spent reading and discussing research papers in the broad area of software-security foundations (i.e., theories, models, and philosophies underpinning software security).

The readings will be posted at <http://www.cse.usf.edu/~ligatti/foss/24>. Please attend each class with access to the paper we are discussing that day. Our in-class discussions will often reference specific definitions and passages in the research papers. Please prepare for each class by reading the paper beforehand.

The two tests and final exam will cover material discussed in class. All tests and the exam are cumulative; earlier material may appear on any test. All tests and the final exam are closed notes, papers, neighbors, friends, phones, laptops, smart devices, etc.

Tests will only be given at the designated times on the designated dates. There are no makeup tests or exams in this course.

Tests and the final exam may include one or more essay questions. Respond in complete sentences. Avoid extraneous details in your responses. Also avoid using bulleted and enumerated lists in your responses. Essays will be graded based on readability, correctness, and thoroughness.

Research paper: Besides the two tests and final exam, your grade is determined by a research paper due in hard copy in class on 04/24. You may complete this paper alone or with 1-3 other students, but expectations are higher with more coauthors. The paper should present original, but likely small-scale, research in the broad area of software security. This paper will be graded on readability, correctness, thoroughness, novelty, and significance. It is expected that your paper would be around 4-8 pages in length, including well-formatted references. Cite sources properly, and do not plagiarize.

Late submission: The only graded item that can be turned in late for credit is the research paper, which you may submit (by email) up to two days late with a 10% penalty.

Grading system: The scale for final letter grades is as follows, using standard notation for ranges: A ($\infty, 93.3$], A- (93.3, 90], B+ (90, 86.7], B (86.7, 83.3], B- (83.3, 80], C+ (80, 76.7], C (76.7, 73.3], C- (73.3, 70], D+ (70, 66.7], D (66.7, 63.3], D- (63.3, 60], and F (60, $-\infty$). A+ grades may be awarded for exceptionally outstanding work.

Academic honesty: Students caught violating academic integrity, for example by using notes or a phone during a test, or plagiarizing in a research paper, will receive an FF grade for the course.

Additional USF policies (e.g., regarding academic integrity) may be accessed at: <https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx>