Syllabus

SSW 567 - Software Testing, Quality, and Maintenance

School of Systems and Enterprise

Fall 2023

Meeting Times: Online/Weekly

Instructor: Dr. Lu Xiao

Contact Info: lxiao6@stevens.edu

Office Hours: Wednesday 10:00 am-12:00 pm or by Appointment

Virtual Meeting Room:

Course Web Address: [https://sit.instructure.com/my/luxiao66](https://sit.instructure.com/courses/28336)

Prerequisite(s): Good working knowledge of Python

Corequisite(s):   None

Cross-listed with: None

COURSE DESCRIPTION

This course is an in-depth study of software testing and quality throughout the development process. The successful student will learn to effectively analyze and test software systems using a variety of methods as well as to select the best-fit test case design methodologies to achieve the best results.

There is extensive hands-on project work in this course. Emphasis is placed on testing as a technical investigation of a product undertaken to determine the system quality and on the clear communication of results, both of which are crucial to success as a tester.

LEARNING OBJECTIVES

The purpose of this course is to provide the students with the following capabilities:

- Develop effective test plans and test strategies throughout the system lifecycle
- Select best fit test case design methodologies
- Prevent system defects and failures through appropriate early defect removals techniques such as requirements reviews, code reviews, and integration test
- Design and implement tests and measure the results
- Measure the progress of the testing process
- Manage configurations and trouble reports
- Project the expected reliability and quality of a release
- Understand and test for limited security vulnerabilities
- Understand and use (limited) automated testing tools
- Demonstrate critical thinking by reviewing and critiquing current topics in the field
- Understand how software testing fits into the continuous integration and continuous delivery pipeline
- Practice learning through lab exercises & teamwork

FORMAT AND STRUCTURE

This course consists of lectures, readings, quizzes, and homework assignments, some of which will require programming in Python. Stevens Canvas on-line system is the delivery mechanism. All materials will be available on the online system.

COURSE MATERIALS

Textbook

- Software Testing: A Craftsman's Approach. 4th Edition – Jorgensen *[ST]*

Jorgensen's book is available online through Safari Books Online, *at this link* **online version of Jorgensen's book** ⤷ *(http://ezproxy.stevens.edu:2098/book/software-engineering-and-development/software-testing/9781466560680)* .

Optional Textbook

- A Practitioner's Guide to Software Test Design by Copeland - Artech House [PG]

COURSE REQUIREMENTS

1. Weekly reading assignments
2. Weekly recorded video lectures accompanied by lecture materials
3. Weekly online submissions of individual homework assignments
   - Some programming will be required for the homework assignments. Students will program some assignments using the Python programming language
   - Some assignments will require the use of GitHub for managing source code.
4. Weekly online quizzes
5. Periodic writings (once every 3 weeks) are posted to an online shared discussion board - the *Tech Blog*
6. Occasional online live meetings or live discussion groups with the professor
7. Final group project

GRADING PROCEDURES

The course has weekly quizzes, weekly homework assignments, contributions to a technical blog, and a final project which will be given online. All are graded.

Your final grade will be weighted

- 30% for homework assignments,
- 30% for quizzes,
- and 40% for the final project.

Final grades will be awarded in accordance with the standard Stevens grading scale.

LATE SUBMISSIONS

All quizzes, assignments, projects, and homework should be submitted on time. Naturally, during the course of the semester, there may be times when for whatever reason you find that you will not be able to submit an assignment on time. In all cases where an assignment will be late, you need to contact me via email, prior to the due date to inform me that you will need an extension. If it is a valid reason then I may grant you an extension. Late submissions will be deducted points.

- 10% off per 24 hours delay

OFFICE HOURS

Wednesday 10:00-12:00, **[https://sit.instructure.com/my/luxiao66](https://sit.instructure.com/courses/28336)**

ACADEMIC INTEGRITY

Graduate Student Code of Academic Integrity

All Stevens graduate students promise to be fully truthful and avoid dishonesty, fraud, misrepresentation, and deceit of any type in relation to their academic work. A student's submission of work for academic credit indicates that the work is the student's own. All outside assistance must

be acknowledged. Any student who violates this code or who knowingly assists another student in violating this code shall be subject to discipline.

All graduate students are bound to the Graduate Student Code of Academic Integrity by enrollment in graduate coursework at Stevens. It is the responsibility of each graduate student to understand and adhere to the Graduate Student Code of Academic Integrity. More information including types of violations, the process for handling perceived violations, and types of sanctions can be found at **www.stevens.edu/provost/graduate-academics** ▭ **(http://www.stevens.edu/provost/graduate-academics)** .

Special Provisions for Undergraduate Students in 500-level Courses

The general provisions of the Stevens Honor System do not apply fully to graduate courses, 500 level or otherwise. Any student who wishes to report an undergraduate for a violation in a 500-level course shall submit the report to the Honor Board following the protocol for undergraduate courses, and an investigation will be conducted following the same process for an appeal on false accusation described in Section 8.04 of the Bylaws of the Honor System. Any student who wishes to report a graduate student may submit the report to the Dean of Graduate Academics or to the Honor Board, who will refer the report to the Dean. The Honor Board Chairman will give the Dean of Graduate Academics weekly updates on the progress of any casework relating to 500-level courses. For more information about the scope, penalties, and procedures pertaining to undergraduate students in 500-level courses, see Section 9 of the **Bylaws of the Honor System** ▭ **(http://web.stevens.edu/honor/documents/Bylaws%20of%20the%20Honor%20System%20of%20Stevens%20Institute%20of%20Technology.pdf)** document, located on the Honor Board website.

LEARNING ACCOMMODATIONS

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. Student Counseling and Disability Services works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, and psychiatric disorders in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from SCDS staff. The SCDS staff will facilitate the provision of accommodations on a case-by-case basis. These academic accommodations are provided at no cost to the student.

Disability Services Confidentiality Policy

Student Disability Files are kept separate from academic files and are stored in a secure location within the office of Student Counseling, Psychological & Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability

documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

For more information about Disability Services and the process to receive accommodations, visit **https://www.stevens.edu/sit/counseling/disability-services** ⤢ **(https://www.stevens.edu/sit/counseling/disability-services)** . If you have any questions please contact:

Lauren Poleyeff, Psy.M., LCSW - Diability Services Coordinator and Staff Clinician in Student Counseling and Disability Services at Stevens Institute of Technology at **lpoleyef@stevens.edu (mailto:lpoleyef@stevens.edu)** or by phone **(201) 216-8728.**

You can see the Office of DIsability Services FQA: **https://www.stevens.edu/directory/office-disability-services/faq** ⤢ **(https://www.stevens.edu/directory/office-disability-services/faq)**

INCLUSIVITY STATEMENT

Stevens Institute of Technology believes that diversity and inclusiveness are essential to excellence in education and innovation. Our community represents a rich variety of backgrounds, experiences, demographics, and perspectives and Stevens is committed to fostering a learning environment where every individual is respected and engaged. To facilitate a dynamic and inclusive educational experience, we ask all members of the community to:

- be open to the perspectives of others
- appreciate the uniqueness of their colleagues
- take advantage of the opportunity to learn from each other
- exchange experiences, values, and beliefs
- communicate in a respectful manner
- be aware of individuals who are marginalized and involve them
- keep confidential discussions private

NOTE that I reserve the right to modify this syllabus as needed to correct any errors or to accommodate any change in plans.   Any such modifications will be communicated to the class.