Course Overview

CS 3250
Software Testing
Goals

• Become better testers
  • Understand and be able to create high-quality tests at all testing levels
  • Understand practical ways to design and automated high-quality tests
  • Understand how to apply theory (test criteria) in practical ways

• Become better programmers
  • Be aware of potential problems in software and able to create high-quality developer tests

• Become better engineers
  • Understand and be able to build programs and test them in a unified manner

• Become better thinkers
  • Understand and be able to approach software problem solving in logical, analytical ways
How Do We Get There?

- What is software testing?
- Why do we test software?
- When should we test software?
- Who should test software?
- How should we test software?
- When should we stop testing? Good enough?
- How many tests do we need to write?
- How do we choose test inputs effectively?
- How can we measure the quality of a test suite?
Course Topics

• Importance of Software Testing

• Testing in Practice
  • Testing activities: test design, test automation, test execution, and test evaluation

• Test Automation

• Test-Driven Development
  • Test harness
  • Testing in Agile process

• Test Coverage Criteria
  • Input space partitioning
  • Graph coverage
  • Logic coverage
  • Syntax coverage

Instead of how testing is done, we focus on how it should be done and how it will be done
Prerequisites

- Discrete math, programming, data representation, and general knowledge of software engineering
- Java, syntax and semantics of multiple programming languages
- Software installation skills

**Intent:** Prerequisites define what you need to know before taking a class to success in the class

- Not knowing that material means you are taking the class “at risk” – that is your responsibility

Please do not ask if you “can take the class without the prerequisites”
You can, but I have to advise against it
Logistics

- **Class URL:** http://www.cs.virginia.edu/~up3f/swtesting/

- **Objective:** How to design effective tests

- **Readings:** Posted in schedule, please read before class

- **Textbook:**

- **Video:** Recording lectures / class meetings ... depends on attendance

- **Guest speaker sessions:** Required attendance
Learning Activities

• **Quizzes:** Five quizzes, biweekly, first 10-15 minutes of class
  • No makeups, no late quizzes, no dropped quizzes
  • Replaces traditional midterm exam

• **In-class exercise:** Weekly
  • No makeups, 2 lowest grades dropped for unavoidable absences

• **Homework:** Almost weekly, due at the beginning of class
  • 25% deduction for late submissions per day
  • Not accepted after 2 days past the due date

• **Showcase:** Choose one
  • Option 1: Test generation
  • Option 2: Position paper

• **Final:** Comprehensive closed-book/note, in class
Discussion Board Use

• This course uses Piazza
  • URL: https://piazza.com/virginia/fall2019/cs3250/home
  • You should have gotten an invitation today
  • If not, check your UVA email or check with me

• Questions should be posted to an appropriate thread
  • Answered by instructor or TAs
  • Questions and answers available for all to see
Grading Policy

- Final exam 20%
- In-class exercises 20%
- Homework assignments 20%
- Quizzes 30%
- Showcase 10%