

Spring 2018
**SE 333/433: Software Testing and Quality
Assurance**

Instructor: Mona Rahimi
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Office Hours: Tuesday 4:00pm-5:30PM

Course Objectives:

To help students gain an understanding of principles and issues in software test and analysis. Students will become familiar with various levels of testing such as unit, integration, system, performance and stress testing and develop an understanding of test lifecycle planning, test design & coverage analysis, test case selection and complexity measurements. The specific topics covered by the course is shown under the schedule section at the bottom of this document.

Class Schedule:

Tuesday from 5.45pm-9.00pm CDM Building Room 228

Homework:

Six homeworks will be assigned as shown in the class schedule. Late work will NOT be accepted after the deadline without a doctor's note. Please note that (1) homework assignments and deadline dates will NOT change, and (2) you are expected to complete all homeworks.

Reading List:

- (Optional) Software Testing and Analysis: Process, Principles and Techniques, by Mauro Pezze, and Michal Young, Wiley. ISBN-10: 0471455938 ISBN-13: 978-0471455936
- (Optional) Introduction to Software Testing, by Paul Ammann and Jeff Ouffutt. ISBN-13: 978-0521880381 ISBN-10: 0521880386
- (Optional) The Art of Software Testing, Second Edition by Glenford J. Myers et. al. Digital copy available in library.
- (Optional) Software Engineering: A Practitioner's Approach, Roger S Pressman, McGraw-Hill, Chapters 14-20, 23.

Grades:

- Homework: Six assignments (50%)
- Attendance: (10%)
 - Attendance is required for this course. Attending lectures help you to better understand the home works.
 - Attend and participate in class. Sign the attendance sheet which will be made available starting in Week 2. If you skip the occasional lecture you must complete the class activity for that week.
- Exams:
 - Midterm (20%)
 - Final (20%)
- Extra Credit (10 points): Students can choose to do research on well-known software failure cases which I will assign during the course related to our discussion topic. Students require to present

his/her findings in form of a 15-20 minutes in class presentations (online students can record and submit high quality videos of their presentation).

Prerequisites:

The following course is listed as a prerequisite.

Data Structures II (CSC301 or CSC403 or CSC383 or CSC393) or Object-Oriented Modeling (SE 430) Proficient in programming and data structures. Assignments will use Java. Familiar with object-oriented modeling and principles. Familiar with software development processes.

Schedule:

You can see a draft for schedule below. The lecture topics from weeks 4 onwards are still flexible. The schedule will be updated on D2L.

| | | Tuesday | | Reading | Assignments | Material |
|----|-----|---------|---|---|--|---|
| 1 | Mar | 27th | Introduction to Software Testing, Overview of Testing Techniques | Pezze: Chapter 1-4 | ClassActivity1 | |
| 2 | Apr | 3rd | Software Quality, Non Functional Requirements, Levels of Granularity of Testing | Pezze: Chapter 1-4 | Assignment: Software Quality Assigned Case Study: (HealthCare.gov) | |
| 3 | | 10th | Unit Testing, Junit Part I, Tips on Testing | Pezze: Chapter 17 | Assignment due Assignment: Junit & Eclipse Assigned | JUnit1.zip Turnstile.zip |
| 4 | | 17th | Black Box Testing Part I, Junit Part II | Pezze: Chapter 9-10 | Assignment due Assignment: Black Box Testing Assigned Case Study: (Knight Capital) | JUnit2.zip |
| 5 | | 24th | Black Box Testing Part II Junit + Ant | Pezze: Chapter 10 | Assignment due Assignment: Junit & Ant Assigned | JUnit3.zip |
| 6 | May | 1st | Midterm Exam Participation Mandatory | | | |
| 7 | | 8th | Combinatorial Testing, Programs Models and Graphs, Structural Testing | Pezze: Chapter 11.1, 11.3-11.4 5.1-5.3 12 | Assignment due Assignment: BlakBox Testing Assigned Case Study: (Airbus A320) | |
| 8 | | 15th | Structural Testing Cobertura | Pezze: Chapter 12 | Assignment due Assignment: White Box Testing Assigned Case Study: (Therac25), (AT&T) | Coverage1.zip |
| 9 | | 22th | Static Analysis and Inspection, Integration & System Testing | Pezze: Chapter 18, 21.1, 21.2, 22, 23 | Assignment due Final Exam Assigned | Take Home Final Exam due by Sunday 27th @ midnight |
| 10 | | 29th | Dr. Rahimi will be out of country for ICSE conference | | | |