SE 4367 – Software Testing, Verification, Validation and Quality Assurance

Course Information

Course Number	*SE4367*
Course Title	*Software Testing, Verification, Validation and Quality Assurance*
Term	*Summer 2018*

Professor Contact Information

Instructor	*Dr. Mehra Borazjany*
E-Mail	*mehra@utdallas.edu*
Office hours	*MW 11:00 – 12:00 pm (Other date and time by appointment only)*
Office location	*ECSS 4.203*

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisite:	*SE 3306 (Mathematical Foundations of Software Engineering)* *CE/CS/SE 3354 (Software Engineering)*

Course Description

Concepts and techniques for testing and modifying software in evolving environments. Topics include:

- *Software testing at the unit, module, subsystem, and system levels*
- *Developer testing*
- *Automatic and manual techniques for generating test data*
- *Testing concurrent and distributed software*
- *Designing and implementing software to increase maintainability and reuse*
- *Evaluating software for change*
- *Validating software changes*

Student Learning Objectives/Outcomes

After successful completion of this course, the students are expected to gain these:

1. *Ability to understand the goals and different types of software testing*
2. *Ability to understand and apply functional testing*
3. *Ability to understand and apply structural testing*
4. *Ability to understand and apply GUI testing*
5. *Ability to understand and apply security-related testing*
6. *Ability to understand and apply software testing tool*

Main Textbooks and Materials

- **Required:** *Introduction to Software Testing* (**edition 2**), Ammann and Offutt.
- **Required:** *Test Driven: Practical TDD and Acceptance TDD for Java Developers*, Lasse Koskela, Manning Publications, 2007.

Content (Author of the book)

This BOOK has two closely related themes.

- *First, more than half the effort in software development is devoted to activities related to testing, including test design, execution and evaluation. This course will teach quantitative, technical, practical methods that software engineers and developers can use to test their software, both during and at the end of development.*
- *Second, more than half of software development effort is not new development, but maintenance activities such as adding new features, correcting problems, migrating to new platforms, and integrating third-party components into new projects. These two themes are intertwined because much of the effort during maintenance is testing the changes, and much of the effort in testing is about evaluating changes.*

This course covers these two themes quantitatively, with a solid basis in theory and with practical applications. These topics will be useful to strong programmers in the Computer Science program, as well as engineers, physical scientists, and mathematicians who regularly integrate software components as part of their work. These topics are of interest to and accessible to students in a wide variety of specializations.

Reading

I expect you to read the relevant material before the class meets. The lectures may not cover everything in the readings and will often include material not found in the readings.

Attending Policy

- ❑ Please have your laptop in the class with you. Make sure it does have enough charge.
  - **Lectures** in this class will be ***computer free***.
  - **Computers** will be used during **in-class exercises, quizzes, ….**
- ❑ Three absences lead to one letter grade drop.
- ❑ More than three absences lead to an F.
- ❑ If you have an emergency contact the instructor.

NOTE: This class attendance policy is stricter than university policy.
For detailed information about University policies please refer to http://cs.utdallas.edu/education/graduate/attendance-policy/

Grading Policy

- ***Group Homework Assignments 20%.***
  - We will have graded assignments for most topics. They will be posted on the elearning, and any clarifications or hints will be posted on the **homework discussion board**.
  - No zip files please!
  - You will collaborate in teams of up to three students
  - Late submissions will receive a 10% per day.
  - Identical or highly similar solutions could result in zero point and academic discipline.
- ***Instead of midterm exams, we will have weekly quizzes 30%.***
  - Quizzes will be given the first 10 or 15 minutes of class and will cover material from the previous class meeting and from the reading assigned for that day.

    - ❑ **Quiz Re-take policy**: students who miss or perform badly on a quiz can have ***one retake*** *per quiz*.
    - ➢ **Scoring**: The maximum score on a retake quiz is 80%.
    - ➢ **Replace**: If you take the retake, your new score will count and the first score is dropped.
    - ➢ **Scheduling**: Students who want a retake a quiz must send an email to the professor and the TA telling us which quiz and when you want to take it.
    - ➢ **Content**: The retake quiz will be different from the one given in class but will cover the same topics.
    - ➢ **Timing**: All retakes must be completed before the end of the reading period.
    - ➢ **Times and locations**: Retake quizzes will be offered:
      1. During the TA's office hours (TBD)
      2. During the instructor's office hours (*MW 11:00 – 12:00 pm)*
- ***One Final Exam 35%.***
  - There is no Retake for the Final Exam.
- ***Participation (discussion board and in-class) 15%.***
  - IN-CLASS EXERCISES
    - ➢ We will have in-class exercises during most class meetings. Some will be done as a class, some will be done in groups, and a few may be individual exercises. They will be graded on a pass or fail basis and will count toward your overall grade. They will be announced during class.
    - ➢ ***Important: Credit can only be received if done in class, although if you miss class, you should do the posted assignments on your own to prepare for the quizzes or final exam.***

- DISCUSSION BOARD USE
  - We will use the discussion board throughout the semester. Participation on discussion board will count towards your participation grade. Ask all technical questions about the material or the assignments on discussion board. You should post about software failures, errors in the books or slides, or about topics that extend from our classroom discussion.

Grading Policy Summary

- ***Participation (discussion board and in-class): 15%***
- ***Assignments: 20%***
- ***Quizzes: 30%***
- ***Final Exam: 35%***

The base grading scale given below may be adjusted based upon the performance of the class as a whole:

Total Score	>=97	>=94	>=90	>=87	>=84	>=80	>=77	>=74	>=70	>=67	>=64	>=60	<60
Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

Even if you get 86.99 your grade will be "B", not "B+" though it is so close to 87.

For detailed information about University policies and procedures related to this syllabus, please refer to http://go.utdallas.edu/syllabus-policies.

I have read and understand the format of this course and the policies described in the syllabus. I acknowledge that failure to comply with the terms of the syllabus may affect my success in this class.

Print Name: _____
Signature: _____
Date: _____