CSc 179 Lecture Notes

1 – **Course Introduction**

Computer Science Department

California State University, Sacramento

CSc Dept, CSUS

Overview

- Classroom conduct

- Prerequisites

- Course topics

- Texts and references

- Grading: exams and programs

- Communication

- Workload

- Ethics

- Grading scheme for the course assignments

CSc Dept, CSUS

Contacting Your Instructor

Dr. Doan Nguyen

Office: Riverside Hall 5009

Phone: (916) 278-6834

Office Hours: M 9:00 AM –12:00 PM
                 and by appointment

Email: doan.nguyen@csus.edu

Webpage: http://ecs.csus.edu/~nguyendh

Classroom Etiquette

This course requires concentration and focus!

Out of respect for others in the room:

Cell Phones :   off

and please refrain from:

browsing, facebooking, social networking,

texting, instant messaging, tweeting, blogging,

gaming, during class…

CSc Dept, CSUS

Prerequisites

- CSc 131 (Intro. to Software Engineering)
- Full CSC major status

Prerequisites By Topic

Programming Experience **(review "Java Basics" in Appendices)**

- 3 semesters in Java, C++, or similar OOP.

- Object-based principles: class/object definitions, method invocation, public vs. private fields, etc.

- Algorithms/data structures: lists, stacks, trees, hashtables, recursion

Software Engineering Topics

- Life Cycle: requirements, design, implementation, testing
- UML: Class, use-case, sequence diagrams

CSc Dept, CSUS

What is this course about ?

Main topics:

Unit, integration and system testing;

Verification and validation (V&V);

Quality assurance;

Metrics;

and configuration management;

CSc Dept, CSUS

First topic: **<u>Unit, integration and system testing</u>**

o   Define each testing level

o   Coverage at each level (what we are testing?)

o   Derive test cases, Testing automation

o   Audiences

o   Tools

Second topic: **Verification and Validation**

o   Knowing the meaning

o   Activities involved

o   Testing and SW Development Lifecycle

o   IV&V

CSc Dept, CSUS

Third topic: **Quality assurance**

- o What is software quality ?

- o Software quality attributes

- o Software Quality Assurance

- o ISO 9000
  - ▪ generic standard - means that the standard can be applied to any organization, large or small

- o SQA Activities

- o Advantages/Disadvantages

CSc Dept, CSUS

Fourth topic: **<u>Testing Metrics</u>**

o Why Measure?

o   Definition

o   Metrics Philosophy

o   Types of Metrics

  ▪ % Complete, Fail Rate, Test Coverage, Passed, Blocked, etc

o   Interpreting the Results

CSc Dept, CSUS

Fifth topic: <u>Configuration Management</u>

o Why is Software Difficult to Build ?

o Software Configuration Basics

o SCM definitions

o Example of configurations items

o Version Control and Change Control

o Baseline Management
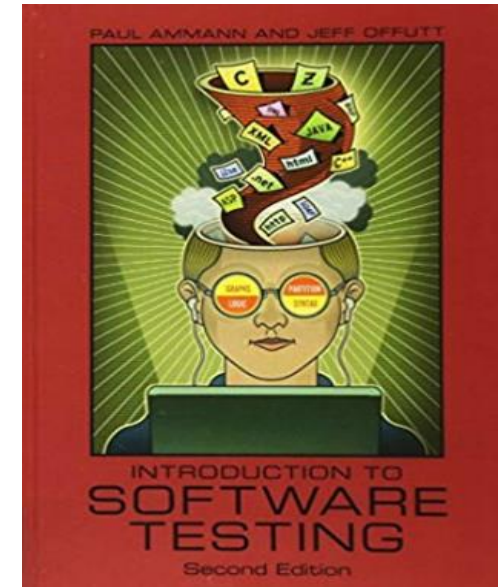
Weekly Tentative Schedule:

Week	Topic
1	Software quality assurance, Verification & validation
2	Introduction to software testing (Unit, Module, Subsystem, and System Testing), Testing Software Specification, Testing tools
3	Model Driven Test Design (MDTD)
4	Black box testing Test Automation
5	White box testing
6	White box testing (cont)
7	Introduction to Test-Driven Development (TDD) Web application testing, Usability testing
8	Code Inspection Midterm examination
9	Testing the documentation
10	Configuration Management (CM). Introduction to Git/GitHub software.
11	Testing for security
12	Mutation testing (advanced testing)
13	Software testing metrics
14	Project presentations I
15	Project presentations II
16	Review and Final Examination

Texts and References

- Required Texts:

  o CSc 179 Lecture Notes (Available weekly), available at the "Files" section of LMS (Canvas)

CSc Dept, CSUS

Texts and References (cont.)

- Recommended Text:

  o Introduction to Software Testing

  o ISBN-13: 978-1107172012

- Supplemental materials:

  o Basic Debugging With Eclipse:
  https://www.youtube.com/watch?v=PJWtO5wrptg

  o Test-Driven Development With Junit
  https://www.youtube.com/watch?v=2Ekty7t621k

Grading

- Weighted Curve based on:

  o Project reports, presentation,   40%
    assignments

  o Midterm Exam   20%

  o Final Exam   25%

  o Quizzes   10%

  o Roll Attendance   5%

CSc Dept, CSUS

Grading

- Additional Criteria
  - Not to miss more than 1 week of class
  - Passing completion of :
    - Project presentation + Assignments
    - Exams (Midterm + Final combined)
    - Attendance/Quizzes

Grading **(cont.)**

- Late assignments are accepted **up until 1 week** past due date
- Late penalty: 5% per day, weekend days and holidays are counted
- Submissions can be updated **only** prior to the due date**:**
  - The version submitted right before the due date will be graded
  - If no such version exists, the version submitted right after the due date will be graded (as late assignment)
- Must keep a *backup* (machine-readable) copy

Grading **(cont.)**

Exams

- o Dates are noted on the outline
- o Final Exam as scheduled by University
- o Study Guides will be provided
- o Make-up exams only under extreme circumstances:
  - *generally requires prior arrangements*

<u>Grading</u> (cont.)

Attendance Quizzes

- o Usually held at the end of lectures
- o There is no makeup quiz allowed

CSc Dept, CSUS

<u>Final Exam Schedule</u>

o Date: Thursday, May 16

o Time: 10:15 AM – 12:15 PM

CSc Dept, CSUS

Communication

- LMS (Canvas): **canvas.csus.edu**

  - assignments
  - announcements (via LMS (Canvas) with emails)
  - feedback and grades

- Check your SacLink email and LMS (Canvas) <u>daily</u>

CSc Dept, CSUS

Ethics

- Submitting work *constitutes an agreement* that *the work is solely your own*

- Students who violate the University policy on academic honesty are:
    - **Automatically Failed**
    - **Referred to the Dean of Students**

- Detailed Ethics policies given in syllabus and posted on LMS (Canvas)

CSc Dept, CSUS

Ethics (cont.)

- You are allowed and encouraged to discuss assignments with other students in the class. Getting verbal advice/help from people who've already taken the course is also fine.

- Any reference to assignments from previous terms or web postings is **unacceptable**

- Any copying of non-trivial code is **unacceptable**
  - Non-trivial = more than a line or so
  - Includes reading someone else's code and then going off to write your own.

<u>Questions?</u>