COMP 5710, Software Quality Assurance

Credit hours: 3 lecture
Contact hours: 3 lecture

Catalog Description: Processes, methods, and tools associated with the production of robust, high-quality software.

Prerequisites: COMP 3700 or COMP 3710
Corequisites: None

Required Course (SWEN, WIRS – software specialization) Selected Elective Course (CSCI)

Instructor or Course Coordinator: Dr. Kai Chang

Required Textbook

Course Outcomes
The student will be able to
- understand the reason and purpose of software quality assurance.
- comprehend the ingredients of quality assurance: software quality assurance; configuration management; verification and validation; and test and evaluation.
- understand software life cycles and software processes.
- know the mechanics of Cleanroom software engineering.
- understand the functions of configuration management: identification, control, auditing, and status accounting.
- know the models of automated configuration management: check-out/check-in, composition, long transaction, and change tracking.
- understand the techniques of verification and validation: reviews, inspections, walkthroughs, and audits.
- understand graph theory as it applies to source code representation.
- construct test cases for path, branch, and usage coverage.
- construct test cases for equivalence class partitioning, boundary value analysis, cause-effect analysis.
- construct a test strategy for unit, integration, and system tests.
- articulate automated unit testing with JUnit.
- understand metrics common to software quality assurance.

Topics Covered
- Overview, verification and validation (2 hours)
- Software quality assurance and engineering (3 hours)
- Software process overview (3 hours)
- Configuration management (2 hours)
- Reviews and inspections (2 hours)
• Testing overview (1 hour)
• Graph theory (2 hours)
• Structural testing (5 hours)
• Functional testing (4 hours)
• Testing strategies (4 hours)
• Metrics (3 hours)
• Selected quality assurance topics/presentations (11 hours)
• Exams (3 hours)

Course Requirements
• Homework assignments (15%)
• Exam 1 (22.5%)
• Exam 2 (22.5%)
• Presentation (15%)
• Final exam (25%)

Syllabus prepared: Spring 2016