CS 4560: SOFTWARE TESTING AND QUALITY ASSURANCE

*Semester Hours:* 3.0  
*Contact Hours:* 3

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*Year:* 2013

**SPECIFIC COURSE INFORMATION**

*Catalog Description:*

Various aspects of software testing and quality assurance including measurement of software quality, verification and validation of software projects, and unit and integration testing techniques. Prerequisite: Grade of C or better in CS 3540. Credit cannot be earned for both CS 4560 and CS 5560. Approved for distance learning.

*Course type:* ELECTIVE

**SPECIFIC COURSE GOALS**

- I can perform code reviews to verify requirements.
- I know how to write unit tests using a unit testing framework.
- I understand the difference between unit and integration testing.
- I can write both functional and structural tests.
- I can measure software quality metrics on a software system.

**SOFTWARE ENGINEERING STUDENT OUTCOMES ADDRESSED BY THIS COURSE**

- SE 6 An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- SE 7 An ability to acquire and apply new knowledge, as needed, using appropriate learning strategies
LIST OF TOPICS COVERED

- Introduction and Importance of Testing and Quality Assurance (Week 1-2)
- Verification: Static Testing Techniques (Week 2-5)
  - Code reviews
  - Technical document reviews
  - Walkthroughs
  - Inspections
- Functional, Structural, Regression Testing (Week 6-9)
- Validation: Dynamic Testing Techniques (Week 9-11)
  - Unit/Component testing
  - Popular unit testing frameworks
  - Integration testing
- Software Quality Assurance (Week 11-13)
  - Measuring software quality
  - Test/code coverage
  - Defect tracking
- Integration Testing in the Development Process (Week 14-16)
  - Continuous Integration/automatic test execution
  - Enabling testing in build system
  - Testing in development vs production environments
  - Test First/Test Driven Development