Computer Science and Engineering CSE 4283
Software Testing and Quality Assurance

CREDIT/CONTACT HOURS: Credit Hours: 3, Contact Hours: 45

COORDINATOR: Dr. Nan Niu

a. Supplemental Material: No required material

SPECIFIC COURSE INFORMATION:
Catalog Description: Three hour lecture. Topics include methods and testing, verification and validation, quality assurance processes and techniques, methods and types of testing, and ISO 9000/SE CMM process evaluation.
  a. Prerequisites: Grade of C or better in CSE 4214/6214
  b. Required/Elective:
     Computer Science – Elective
     Software Engineering – Required
     Computer Engineering – Elective

SPECIFIC GOALS OF THE COURSE:
  a. Specific Outcomes of Instruction:
     1. Provide an introduction to the software engineering testing process
     2. Describe the quality assurance process and its role in software development.
     3. The student will be instructed in a variety of testing techniques, methods, and tools.
     4. The student will be able to describe the state of the practice verification and validation techniques.
     5. The student will demonstrate proficiency in managing a software project to customer requirements.
     6. The impact of ISO 9000 and the capability maturity model on software quality and testing will be addressed.
  b. Criterion 3 Outcomes:
     Note: Parenthesized list indicates the ABET EAC and CAC outcomes addressed by each performance criteria.
     1. The student will be able to describe, discuss, and apply the commonly accepted principles of software quality assurance. (EAC: a, k; CAC: a,i)
     2. The student will be able to select the correct test procedure for a given software development scenario. (EAC: e, k; CAC: b,i)
     3. The student will be able to describe the impact of ISO 9000 processes on a software development organization and differentiate between ISO 9000 and capability maturity model processes. (EAC: j, k; CAC:i)
4. The student will be able to implement object oriented software test procedures, design test cases, execute test procedures, and document results. (EAC: c, g; CAC: c,f)

5. The student will demonstrate proficiency in managing a software inspection and walkthrough - and know the difference between the two. (EAC: d, k; CAC: d,i)

6. The student will be able to apply standard quality techniques to system delivery and to apply appropriate processes. (EAC: c, k; CAC: c,i)

7. The student will be able to implement a statistical quality assurance program. (EAC: a, k; CAC: a,i,j)

8. The student will demonstrate an ability to document their work to an acceptable standard. (EAC: g; CAC: f)

TOPICS COVERED:

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<th>Lecture</th>
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<td>3. Quality Reviews</td>
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<td>4. Statistical Quality Assurance</td>
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<td>5. Verification and Validation Techniques</td>
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