IT-1200: INTRODUCTION TO SOFTWARE QUALITY ASSURANCE

Cuyahoga Community College

Viewing: IT-1200 : Introduction to Software Quality Assurance

Board of Trustees:

November 2020

Academic Term:

Fall 2021

Subject Code

IT - Information Technology

Course Number:

1200

Title:

Introduction to Software Quality Assurance

Catalog Description:

Introductory course in Software Quality Assurance that provides the fundamentals of software development life cycle, role of a tester, software testing types, methodologies, software testing cycle and testing tools.

Credit Hour(s):

4

Lecture Hour(s):

3

Lab Hour(s):

2

Requisites

Prerequisite and Corequisite

None.

Outcomes

Course Outcome(s):

Explain the role of testing in software development and discuss testing processes and techniques.

Essential Learning Outcome Mapping:

Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):

1. Explain software testing.
2. Explain why testing is necessary.
3. Describe the Psychology of Testing.
4. Identify the Software Testing Principles.
5. Explain the Testing Process.
6. Identify Test Levels and describe each of them.
7. Identify Test Types and explain each of them.
8. Explain what is meant by Maintenance Testing (Impact analysis and Regression).
9. Explain the Test Management process.

Course Outcome(s):

Use knowledge of how testing integrates with software development team.

Objective(s):
1. Define Software development Lifecycle.
2. Explain the role of testing in software development life cycle.
3. Explain the role of Test Managers and Testers in a Software Development Team.
4. Describe the importance of communication for Testers.

Course Outcome(s):
Develop a test plan using the scientific method that meets user acceptance criteria based on existing code and allows plans to be repeatable (i.e. performance, user acceptance, regression).

Objective(s):
1. Explain static testing.
2. Identify various test techniques.

Course Outcome(s):
Perform testing on software including API/Web service, Web, Desktop, and Mobile. (Response Web Design)

Objective(s):
1. Describe the pros and cons of testing in Agile Environment
2. Describe the approach to testing Mobile Apps
3. Identify the Tool Support available for Testing

Methods of Evaluation:
1. Lesson Quizzes
2. Discussion Boards/In Class Discussion
3. Written Assignments
4. Lab Activities
5. Final Exam

Course Content Outline:
1. Introduction
    a. What is testing
    b. Why is testing necessary?
    c. Testing principles
2. Psychology & Economics of Software Testing
    a. Psychology of Testing
    b. Economics of Testing
    c. Software Testing Principles
    d. Testing Process
3. Testing throughout the Software Development Lifecycle
    a. Understanding Software Development Lifecycle
    b. Role of a Test Manager and a Tester
4. Static testing
    a. Inspections
    b. Walkthroughs
5. Test Levels
    a. Unit testing & Debugging
    b. Component Testing
    c. Integration Testing
    d. System Testing
    e. Acceptance Testing
6. Test Types
    a. Functional Testing
    b. Non-Functional Testing
    c. White-box testing
    d. Change-related testing

7. Maintenance Testing
   a. Impact analysis
   b. Regression
8. Test Techniques
   a. White-box Techniques
   b. Black-box Techniques
   c. Experience Based Techniques
9. Test Management
   a. Test organization
   b. Test Planning and Estimation
   c. Test Monitoring and Control
   d. Configuration Management
   e. Risks and Testing
   f. Defect Management
10. Additional Topics in Testing
    a. Testing in Agile Environment
    b. Testing Mobile Apps
    c. Tool Support for Testing
    d. Communication for Testers

Resources

Dorothy Graham, Erik P. W. M. Veenendaal, Rex Black. *Foundations of Software Testing ISTQB Certification*. 4th edition. CENGAGE, 2019.

Paul C. Jorgensen. *Software Testing: A Craftsman's Approach*. 4th ed. Boca Raton, FL: CRC Press, 2014.

Brian Hambling , Peter Morgan , Angelina Samaroo, Geoff Thompson, Peter Williams . *Software Testing: An ISTQB-BCS Certified Tester Foundation guide*. 4th ed. BCS Learniing and Development, LTD, 2109.

Cem Kaner , James Bach . *Lessons Learned in Software Testing: A Context-Driven Approach*.

Gerard O'Regan . *Concise Guide to Software Testing (Undergraduate Topics in Computer Science)*.

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