1. **SOFTWARE TESTING AND AUTOMATION**
2. **Sub Code : 14CS604 Credits : 03**
3. **Hrs/Week : 3+1+0+0 Total Hours : 39**

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### **UNIT-I**

1. **Software practice I**: **4 Hrs**

Style: Names, Expressions and Statements, Consistency and Idioms, Function Macros, Comments.

1. **Software practice II** : **4 Hrs**

Algorithms and data structures: Searching, Sorting, Lists, Trees, Hash tables.

Interfaces: Comma-Separated Values, Interface Principles, Resource Management, User Interfaces.

**UNIT-II**

**3. Software practice III**: **4 Hrs**

Performance: A Bottleneck, Timing and Profiling, Strategies for speed , Tuning the code, Space efficiency, Estimation.

**4. Software practice IV**: **4 Hrs**

Debugging: Debuggers, Good Clues, Easy Bugs, No Clues, Hard Bugs, Last Resorts, Non Reproducible bugs, Debugging Tools, Other peoples bugs.

**UNIT-III**

**5. Software Testing**: **7 Hrs**

The six essentials of Software testing: The state of the art and state of the practice, The clean sheet approach to getting started, Establishing a practical perspective, Critical choices: What, When and how to test, Critical disciplines, Frameworks for testing.

**UNIT-IV**

**6. Testing Methods:** **8 Hrs**

Verification testing: Basic verification methods, getting leverage on verification, Verifying documents at different phases, getting the best from verification, three critical success factors for implementing verification, Recommendation.

Validation Testing : Validation overview, validation methods, validation activities, Recommendation strategies for validation testing, Controlling validation costs : Minimizing the cost performing tests , Minimizing the cost of maintaining the tests, Minimizing validation testware development costs, Recommendations, Testing tasks, deliverables and Chronology, Master test planning, Verification testing tasks and deliverables, Validation testing tasks and deliverables. A testing orphan – User manuals, Product release criteria, Summary of IEEE/ANSI test related documents.

**UNIT-V**

1. **Managing Testing Technology & Automation**: **8 Hrs**

Testing Tools: Categorizing testing tools, Tool acquisition, Measurements, Useful and other interesting measures, Recommendations.

Organizational approaches to testing: Organizing and Reorganizing testing, Structural design elements, Approaches to organizing the test functions, Selecting the right approach: Current practices, trends, challenges, GUIs: What is new here, Usage testing, tester to developer ratios, Software measures and practices benchmark study.

**TEXT BOOKS :**

1. Brian W. Kernighan and Rob pike : The practice of programming, Addison-Wesley, 1999.

Chapters 1(except 1.5), 2 (except 2.3, 2.4, 2.5& 2.6), 4 (except 4.2, 4.3 & 4.4), 5, 7.

1. Ed Kit : Software Testing in the real world, Addison – Wesley, 1995.

Chapters 1 to 14.

**REFERENCE BOOKS :**

1. William Perry : Effective methods for software testing (Second edition) Jhonwiely 1999.
2. Bezier B : Software testing techniques II edition, Van Nostrand Reinluold,1990.
3. Myers G.J : The Art of Software testing, John Wiley,1979.
4. LoiseTamres : Introducing software Testing, Pearson Education,2003.