Prasad V. Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada.

1/2 M.Tech. SECOND SEMESTER
CSCS2T6B   **SOFTWARE TESTING METHODOLOGIES   Credits: 4**
ELECTIVE – II

Lecture: 4 periods/week   Internal assessment: 30 marks
Tutorial: 1 period /week   Semester end examination: 70 marks
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Objectives:

1. To define a world-class software testing model, to provide a self-assessment process for your software testing organization
2. To describe the relationship between tools and work processes
3. To understand the costs associated with testing
4. Define the scope of testing and ensure that adequate time and resources are available for testing
5. The test plan should provide background information on the software being tested, test objectives and risks, and specific tests to be performed.
6. Identify defects as close to the point were they originated, speed up development and at the same time reduce the cost of development.
7. To identify problems so that corrective action can be taken.

Leaning Outcomes:

1. Recognition of the need for, and the ability to access information, to follow recent developments in science and technology and to engage in life-long learning.
2. An ability to use the modern techniques and engineering tools necessary for software engineering practices.
3. An ability to gather/acquire, analyze and interpret data to understand software requirements.
4. An ability to design, implement and evaluate a software system, component, process or program to meet specified requirements.
5. An ability to use the modern techniques and engineering tools necessary for software engineering practices.
6. Skills in project and risk management, awareness about importance of entrepreneurship, innovation and long-term development, and recognition of international standards and methodologies.
7. The ability to apply engineering approach to the development of software systems by analyzing, designing, implementing, verifying, validating and maintaining software systems.

UNIT I:
Assessing Testing Capabilities and Competencies: Assessing Capabilities, Staff Competency, and User Satisfaction , Define a World-Class Software Testing Model Customizing the World-Class Model for Your Organization, Develop Baselines for your Organization, Develop an Improvement Plan,
Building a Software Testing Environment: Creating an Environment Supportive of Software Testing: Minimizing Risks, Writing a Policy for Software Testing, Economics of Testing, Economics of Testing, Testing an Organization issue, Managements Support for Software Testing, Building a Structured Approach to Software Testing, DevelopingTest Strategy.

UNIT II:
Building the Software Testing Process: Software Testing Guidelines, Workbench Concept, Customizing the Software-Testing Process, Process Preparationn Checklist.
Selecting and Installing Software Testing Tools: Integrating Tools into the Tester's Work Processes, Toolsting Tools: Integrating Tools into the Tester's Work Processes, Tools Avaialable for Testing Software, Selecting and Using Test Tools, Training Testers in Tool Usage, Appointing Tool Managers.
Building Software tester Competency: What is a Common Body of Knowledge?, Who is Responsible for the Software Tester's Competency?, How Is Personal Competency Used in Job Performance? Developing a Training Curriculum.

UNIT III:
The Seven- Step Testing Process: Overview of the Software Testing Process: Advantages of Following a Process, The Cost of Computer Testing , The Seven-Step Software Process, Workbench Skills.
 Step1: Organizing for Testing: Do Procedures, Appoint the Test Manager, Define the Scope of Testing, Appoint the Test Team. Verify the Development Documentation, Validate the Test Estimate and Project Status, Check Procedures.

UNIT IV:
Step2: Developing the Test Plan: Do Procedures, Profile the Software Project, Understand the Project Risks, Select a Testing Technique, Plan Unit Testing and Analysis, Build the Test Plan, Inspect the Test Plan, Check Procedures.

UNIT V:
Verification Testing: Input, Do Procedures: Test During the Requirements Phase, Test During the Design Phase, Test During the Programming Phase, Check Procedures.Do Procedures: Build the Test Data, Execute Tests, Record Test Results.
UNIT VI: Analysing and Reporting Test Results: Input, Do Procedures: Report Software Status, Report Interim Test Results, Report Final Test Results.

UNIT VII:
Input Procedures, Acceptance Testing, Pre-Operational Testing, Post-Operational Testing, CheckProcedures, Output

UNIT VIII:
 Input Do Procedures: Establish Assessment Objectives, Identify What to Measure, Assign Measurement Responsibility, Select Evaluation Approach, Identify Needed Facts, Collect Evaluation Data, Assess the Effectiveness of Testing Using Testing Metrics.

<div align="center">**Learning Resources**</div>

Text Book:
Software Testing, William E. Perry, WILEY-INDIA Edition, III Edition.

References Books:
1. Software Testing, Renu Rajani, Pradeep Oak, TATA McGRAW HIL
2. The cradft of software testing-Brian Marick, Pearson Education,
3. Software Testing Techniques, SPD (Oreale),
4. Software Testng in the Real World, Edward Kit, Pearson.
5. Art of Software Testing ,Meyers, John Wiley.
6. Software Testing Tools, Dr.KVKK Prasad, Dreamtech.