



THIRD-YEAR OF BACHELOR OF COMPUTER SCIENCE REVISED SYLLABUS ACCORDING TO CBCS

COURSE TITLE: SOFTWARE TESTING AND
QUALITY ASSURANCE

SEMESTER-V, W.E.F. 2021-2022

**Recommended by the Board of Studies in Computer Science And
Approved by the Academic Council**

Devrukh Shikshan Prasarak Mandal's
Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and
Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.
Tal. Sangameshwar, Dist. Ratnagiri-415804, Maharashtra,
India

Academic Council Item No: _____

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangameshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Computer Science
Name of the Class	:	Third Year
Semester	:	Five
No. of Credits	:	03
Title of the Course	:	Software Testing and Quality Assurance
Course Code	:	USCST53
Name of the Vertical	:	Elective I
Eligibility for Admission	:	Any 12 th Pass seeking Admission to Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	70:30
Status	:	CBCS
To be implemented from Academic Year	:	2021-2022
Ordinances /Regulations (if any)		

Syllabus for Third Year of Bachelor of Science in Computer Science

(With effect from the academic year 2021-2022)

SEMESTER-V

Paper No.– 1

Course Title: Software Testing and Quality Assurance

No. of Credits - 03

Type of Vertical: Elective I

COURSE CODE: USCST53

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to...		
Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CO-01	Understand	Understand various software testing methods and strategies.
CO-02	Understand	Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software.
CO-03	Remember	Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.

Syllabus for Third Year of Bachelor of Science in Computer Science

(With effect from the academic year 2021-2022)

SEMESTER-V

Paper No.– 1

Course Title: Software Testing and Quality Assurance

No. of Credits - 03

Type of Vertical: Elective I

COURSE CODE: USCST53

COURSE CONTENT			
Unit No.	Content	Credits	No. of Lectures
I	Software Testing and Introduction to quality : Introduction, Nature of errors, an example for Testing, Definition of Quality , QA, QC, QM and SQA , Software Development Life Cycle, Software Quality Factors Verification and Validation : Definition of V &V , Different types of V & V Mechanisms, Concepts of Software Reviews, Inspection and Walkthrough Software Testing Techniques : Testing Fundamentals, Test Case Design, White Box Testing and its types, Black Box Testing and its types	01	15
II	Software Testing Strategies : Strategic Approach to Software Testing, Unit Testing, Integration Testing, Validation Testing, System Testing Software Metrics : Concept and Developing Metrics, Different types of Metrics, Complexity metrics Defect Management: Definition of Defects, Defect Management Process, Defect Reporting, Metrics Related to Defects, Using Defects for Process Improvement	01	15

<p style="text-align: center;">III</p>	<p>Software Quality Assurance : Quality Concepts, Quality Movement, Background Issues, SQA activities, Software Reviews, Formal Technical Reviews, Formal approaches to SQA, Statistical Quality Assurance, Software Reliability, The ISO 9000 Quality Standards, , SQA Plan , Six sigma, Informal Reviews</p> <p>Quality Improvement : Introduction, Pareto Diagrams, Causeeffect Diagrams, Scatter Diagrams, Run charts</p> <p>Quality Costs : Defining Quality Costs, Types of Quality Costs</p> <p>Quality Cost Measurement, Utilizing Quality Costs for Decision-Making</p>	<p style="text-align: center;">01</p>	<p style="text-align: center;">15</p>
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	Total	03	45
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Required Previous Knowledge

Students should know basic concepts related to computer and computer handling

Access to the Course

The course is available for all the students admitted for Bachelor of Science (Computer Science).

Forms of Assessment

The assessment of the course will be of Diagnostic, Formative and Summative type. At the beginning of the course diagnostic assessment will be carried out. The formative assessment will be used for the Continuous Internal Evaluation whereas the summative assessment will be conducted at the end of the term. The weightage for formative and summative assessment will be 60:40. The detailed pattern is as given below.

Semester End Evaluation (60 Marks)
Question Paper Pattern
Time: 2 hours

Question No.	Unit/s	Question Pattern	Marks
Q.1	I,II &III	MCQ/Fill in the blanks/One line sentence	10
Q.2	I	Descriptive Questions	20
Q.3	II	Descriptive Questions	20
Q.4.	III	Descriptive Questions	20
Total			70

Internal evaluation (30 Marks)

Sr. No.	Description	Marks
1	Classroom Tests	10
2	Project/ Viva/ Presentations/ Assignments	10
3	Attendance	10
Total		30

Grading Scale

10 points grading scale will be used. The grading scale used is O to F. Grade O is the highest passing grade on the grading scale, and grade F is a fail. The Board of Examinations of the college reserves the right to change the grading scale.

Reference book:

- Software Engineering for Students, A Programming Approach, Douglas Bell, 4th Edition,, Pearson Education, 2005
- Software Engineering – A Practitioners Approach, Roger S. Pressman, 5th Edition, Tata McGraw Hill, 2001
- Quality Management, Donna C. S. Summers, 5th Edition, PrenticeHall, 2010.
- Total Quality Management, Dale H. Besterfield, 3rd Edition, Prentice Hall, 2003.

Text book:

- Techmax publication book

Additional References:

- Software engineering: An Engineering approach, J.F. Peters, W. Pedrycz , John Wiley,2004
- Software Testing and Quality Assurance Theory and Practice, Kshirsagar Naik, Priyadarshi Tripathy , John Wiley & Sons, Inc. , Publication, 2008
- Software Engineering and Testing, B. B. Agarwal, S. P. Tayal, M. Gupta, Jones and Bartlett Publishers, 2010

<p>Course: USCSP58</p>	<p>Practical of USCST53 (Credits : 1, Lectures/Week: 3)</p>
<p>USCSP58</p>	<ol style="list-style-type: none"> 1. Install Selenium IDE; Write a test suite containing minimum 4 test cases for different formats. 2. Conduct a test suite for any two web sites. 3. Install Selenium server (Selenium RC) and demonstrate it using a script in Java/PHP. 4. Write and test a program to login a specific web page. 5. Write and test a program to update 10 student records into table into Excel file 6. Write and test a program to select the number of students who have scored more than 60 in any one subject (or all subjects). 7. Write and test a program to provide total number of objects present / available on the page. 8. Write and test a program to get the number of items in a list / combo box 9. Write and test a program to count the number of check boxes on the page checked and unchecked count. 10. Load Testing using JMeter, Android Application testing using Appium Tools, Bugzilla Bug tracking tools.