Ganpat University
॥ विद्यया समाजोत्कर्षः ॥
Faculty of Computer Applications

Programme	B. Sc. (CA & IT) Honours	**Branch**	Computer Applications
Semester	V	**Version**	1.0.0.0
Effective from Academic Year	2026-27	**Effective for the batch Admitted in**	June 2024
Subject code	U15B5SQA	**Subject Name**	SOFTWARE QUALITY ASSURANCE

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CCE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	4	-	-	-	4	Theory	50	50	100
Hours	4	-	-	-	4				

Objective: To develop core skills in software testing and ensure quality assurance in practical scenarios.

Pre-requisites: Basic knowledge of programming concepts and software development lifecycle.

Learning Outcome:

Name of CO	Description
CO1	Understand basic concepts of software testing and the testing life cycle.
CO2	Apply different testing types and techniques to check software quality.
CO3	Identify and explain functional and non-functional testing methods.
CO4	Prepare test cases and use basic automation tools like Selenium or JUnit.
CO5	Report software defects and understand how to measure software quality.

Mapping of CO and PO:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	1	2	2	1	1	1	1	1
CO2	2	2	2	1	2	1	2	1	1	1	1	1
CO3	2	2	2	1	2	1	1	1	1	1	1	1
CO4	2	2	2	2	2	1	2	1	2	1	1	1
CO5	2	2	2	1	2	2	2	1	3	1	1	2

Content:

Unit	Content	Hrs.
1	**Introduction to Software Testing and Quality Concepts** Software Quality Overview, Importance of Software Testing, Verification and Validation, Static vs. Dynamic Testing, V-Model, Software Testing Life Cycle (STLC), Requirement Analysis, Ambiguity Review, Requirement Traceability Matrix, Requirement-Based Testing, Role of SQA in SDLC, ISO and IEEE Quality Standards.	12
2	**Testing Techniques, Levels, and Approaches** Levels of Testing – Unit, Integration, System, Acceptance, Alpha Testing, Beta Testing, Black Box Testing, White Box Testing, Grey Box Testing, Functional Testing, Non-Functional Testing, Boundary Value Analysis, Equivalence Partitioning, Decision Table Testing, Form and Field Validation, Web Application Testing Basics.	12
3	**Advanced Testing Types and Applications** Performance Testing – Load, Stress, Volume, Regression Testing, Compatibility Testing, Usability Testing, Accessibility Testing, Security and Penetration Testing, Exploratory Testing, Ad-hoc Testing, Mobile Application Testing, User Acceptance Testing,	12

	Localization and Globalization Testing, Documentation Testing, Database Testing.	
4	**Management and Automation Practices** Test Planning Basics, Test Strategy, Test Estimation, Test Case Design, Test Execution, Test Reporting, Introduction to Test Automation, Benefits and Limitations of Automation, Overview of Tools – Selenium, JUnit, Postman, Basics of CI/CD in Testing.	12
5	**Defects and Quality Measurement** Software Quality Concepts, Overview of Defects, Common Origins and Causes of Defects, Defect Taxonomy and Classification, Defect Life Cycle and Workflow, Defect Management Process and Best Practices, Writing and Preparing Defect Reports, Features of a Good Defect Report, Standard Defect Report Templates, Defect Prevention Techniques and Strategies, Test Matrices, and Key Quality Measurements.	12

Practical Content:
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Reference Books:	
1	Software Testing-Principles and Practices - By Srinivasan Desikan and Gopalswamy Ramesh, Perason Education
2	Effective Methods of Software Testing (3rd Edition) - By William E, Software Perry Wiley, India
3	Full Stack Testing – By Gayathri Mohan, O'Reilly Media, USA.
Web Reference:	
1	www.qawolf.com/blog/essential-fundamentals-of-software-testing-key-practices-for-success
2	www.iteratorstesting.com/blog/software-testing-life-cycle
3	www.lambdatest.com/learning-hub/web-testing
MOOC/Certificate Course:	
1	www.coursera.org/learn/introduction-software-testing
2	www.coursera.org/specializations/software-testing-automation
Question Paper Scheme:	
	End Semester Examination Duration: (2 Hours Theory Examination) **Note for Examiner: -** Q-1 Any Five out of Seven (25 Marks) Q-2 Any Two out of Three (06 Marks) Q-3 Mandatory question (05 Marks) Q-4 Any Two out of Three (08 Marks) Q-5 Any Two out of Three(06 Marks) *The question paper must comprehensively address all Course Outcomes (COs), align with Bloom's Taxonomy levels, and ensure complete syllabus coverage.