Program: Bachelor of Science (Computer Science)		Semester : V	
Course: Skill Enhancement: Software Testing and Quality Assurance		Course Code: USMACS502	
Teaching Scheme		Evaluation Scheme	
Lecture (Hours per week)	Credit	Continuous Assessment (CA)	Semester End Examinations (SEE)
2	2	25%	75%

Learning Objectives:

- To Summarize different software testing techniques
- To articulate how testing methods can be used to ensure quality assurance in software projects
- To sketch efficient test cases

Course Outcomes:

After completion of the course, learners would be able to:

CO1: Illustrate different testing strategies and methods with appropriate case studies
CO2: Design test plans for software projects
CO3: Use automation of test cases
CO4: Apply Selenium test cases on websites and programs

Outline of Syllabus: (per session plan)

Module	Description	No of hours
1	Software Testing and its types, Introduction to Quality	10
2	Software Metrics and Defect Management, Selenium IDE	10
3	Software Quality Assurance and Automation of Test Cases	10
	Total	**30**

Module	Skill Enhancement: Software Testing and Quality Assurance	No. of Hours/Credits 30/2
1	**Software Testing and its types, Introduction to Quality**	**10**
	Software Testing and Introduction to quality : Introduction, Nature of errors, an example for Testing	**2**
	Definition of Quality , QA, QC, QM and SQA , Software Development Life Cycle, Software Quality Factors	**2**
	Verification and Validation : Definition of V &V , Different types of V & V Mechanisms	**2**
	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.	**3**
2	**Software Metrics and Defect Management, Selenium IDE**	**10**
	Software Testing Strategies : Strategic Approach to Software Testing, Phases of Testing - Unit Testing, Integration Testing, Validation Testing, System Testing	**3**
	Software Metrics : Concept and Developing Metrics, Different types of Metrics – Size-Oriented Metrics, Function-Oriented Metrics, Halstead Metrics, Complexity metrics	**3**
	Defect Management: Definition of Defects, Defect Management Process, Defect Reporting, Metrics Related to Defects, Using Defects for Process Improvement.	**2**
	Introduction to Selenium IDE – Selenium Commands, Creating test cases in Selenium, Testing a website.	**2**
3	**Software Quality Assurance and Automation of Test Cases**	**10**
	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	**4**
	The ISO 9000 Quality Standards, , SQA Plan , Six sigma, Informal Reviews Quality Improvement : Introduction, Pareto Diagrams, Cause-effect Diagrams, Scatter Diagrams, Run charts Quality Costs : Defining Quality Costs, Types of Quality Costs, Quality Cost Measurement, Utilizing Quality Costs for Decision-Making	**3**
	Automation of Test Cases – Automation of creation and retrieval of Excel file, Counting the number of objects in a webpage	**3**

RECOMMENDED READING:
ESSENTIAL READING:

1. Software Engineering for Students, A Programming Approach, Douglas Bell, 4 th Edition, Pearson Education, 2005.
2. Software Engineering – A Practitioners Approach, Roger S. Pressman, 5 th Edition, Tata McGraw Hill, 2001

SUPPLEMENTARY READING:

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