

## 145 years Integrated M.Sc. (IT) [7<sup>th</sup> / 1<sup>st</sup> Semester]

### Lesson Planning

#### 060010711/040250111 – Software Testing

**Objective:** To provide the knowledge of testing and its techniques, to trace errors, bugs or defects and to determine user acceptability using testing tools, so as to ensure that the test plan meets and maintains the business and user requirements as stated in the system.

Course Outcomes: Upon completion of the course, students shall be able to

CO1: To understand the basics of testing process.

CO2: To analyze different testing techniques along with its usage.

CO3: To discuss the distinctions between functional testing and nonfunctional testing.

CO4: To develop test cases.

CO5: To generate a plan for system performance and maintain in testing.

Unit	Sub Unit	No. of Lectures	Topics	Reference Chapter/ Additional Reading	Teaching Methodology to be Used	Active Learner	Evaluation Parameter
UNIT 1: Introduction							
1	1.1	2	Overview of Testing ,Testing Principle	RB#1 Page No. 1	Power Point Presentation		Quiz
	1.2	1	Test Analyst	GB#1 Page No. 5-7	, Discussion, Chalk & Talk		
	1.3	1	Marathon, the Example Application	GB#2 Page No. 9-13	Reading	Reading and Discussion	
	1.4	1	Types of Systems	GB#3 Page No. 15-19	Power Point Presentation , Discussion, Chalk & Talk		
	1.5	1	Test Planning and Test Control, Test Analysis and Test Design	GB#3 Page No. 21,22			
	1.6	1	Test Implementation and Test Execution	GB#3 Page No. 24-26			
	1.7	1	Evaluation of Exit Criteria and Reporting	GB#3 Page No. 26			
	1.8	1	Test Closure Activities	GB#3 Page No. 27			
UNIT 2: Specification-Based, Structure-Based, Defect- Based Testing Techniques							
	2.1	2	Individual Specification-Based Techniques	GB#4 Page No. 30-57	Power Point Presentation		
	2.2	1	Selecting a Specification-Based Techniques	GB#4 Page No. 57	, Discussion, Chalk & Talk		

2	2.3	1	Benefits and Drawbacks of Structure-Based Testing Techniques	GB#5 Page No. 73-76			
	2.4	1	Applications of Structure- Based Testing Techniques	GB#5 Page No. 77	Reading	Reading and Discussion	
	2.5	1	Individual Structural Techniques	GB#5 Page No. 78-88	Power Point Presentation , Discussion, Chalk & Talk		
	2.6	1	Selecting a Structure-Based Techniques	GB#5 Page No. 89-94			
	2.7	1	Defect-Based Testing Technique, Taxonomies	GB#6 Page No. 95-97			
UNIT 3 : Experience-Based Testing, Analysis Techniques, Testing Software Characteristics							
3	3.1	2	Error Guessing, Checklist- based Testing	GB#7 Page No. 100-102	Power Point Presentation , Discussion, Chalk & Talk		UNIT TEST 1
	3.2	1	Exploratory Testing	GB#7 Page No. 102			
	3.3	1	Attacks, Strengths and Weaknesses	GB#7 Page No. 104,105	Reading	Reading and Discussion	Practical Internal 1
	3.4	2	Static Analysis	GB#8 Page No. 109-119	Power Point Presentation , Discussion, Chalk & Talk		
	3.5	2	Dynamic Analysis	GB#8 Page No. 121-127			
	3.6	1	Software Quality Attributes :Test Analyst, Technical Test Analyst	GB#9 Page No. 131			
UNIT 4:Functional, Usability and Accessibility, Efficiency Testing							
4	4.1	1	Accuracy, Suitability Testing	GB#10 Page No. 134-136	Power Point Presentation , Discussion, Chalk & Talk		
	4.2	2	Interoperability, Functional Security Testing	GB#10 Page No. 137-145			
	4.3	1	Usability Testing, Effectiveness	GB#11 Page No. 151,152	Reading	Reading and Discussion	
	4.4	1	Accessibility Testing, Test Process for Usability and Accessibility	GB#11 Page No. 154-157	Power Point Presentation , Discussion, Chalk & Talk		
	4.5	1	Performance, Load, Stress Testing	GB#12 Page No. 164-166			
	4.6	2	Scalability, Resource Utilization Testing	GB#12 Page No. 168-184			
UNIT 5 : Security and Reliability Testing							
5	5.1	1	Planning Security Tests, Typical Security Threats	GB#13 Page No. 204-216	Power point presentation , Chalk &		Unit Test 2

5.2	1	Security Test Analysis and Design	GB#13 Page No. 216-217	Talk ,Discussion	
5.3	1	Execution and Reporting Security Tests	GB#13 Page No. 217-219		
5.4	1	Tools for security Testing	GB#13 Page No. 219	Reading	Reading and Discussion
5.5	1	Failover Testing	GB#14 Page No. 227,231	Power point presentation , Chalk & Talk ,Discussion	
5.6	1	Backup and Restore Testing	GB#14 Page No. 228,232		
5.7	1	Fault Tolerance Testing	GB#14 Page No. 230		
5.8	1	Tools for Reliability Testing	GB#14 Page No. 242-243	Reading	Reading and Discussion

#### UNIT 6: Maintainability and Portability

6	6.1	1	Maintainability Testing	GB#15 Page No. 252-254	Power point presentation , Chalk & Talk ,Discussion		Practical Internal 2 Theory Internal and Assignment
	6.2	1	Planning Issues in Maintenance	GB#15 Page No. 256			
	6.3	1	Adaptability	GB#16 Page No. 271-274			
	6.4	1	Replaceability	GB#16 Page No. 274-276			
	6.5	1	Installation	GB#16 Page No. 277-282 MG#11Page No. 274			
	6.6	1	Co-existence	GB#16 Page No. 282-283			

#### Textbook :

GB :- Graham B., Judy M. - The Software Test Engineer's Handbook – SPD

#### Reference Book:

Dorothy G., Erik V., Isabel E., Rex B. - Foundations of Software Testing: ISTQB Certification - Cengage

### Course Objectives and Course Outcomes Mapping:

To provide the knowledge of testing and its techniques, to trace errors, bugs or defects and to determine user acceptability using testing tools. : CO1, CO2, CO3, CO4

To ensure that the test plan meets and maintains the business and user requirements as stated in the system. : CO1, CO4, CO5

### Course Units and Course Outcomes Mapping:

Unit No.	Unit	Course Outcome				
		CO 1	C O2	CO3	CO4	CO5

1	Introduction	✓				
2	Specification-Based, Structure-Based, Defect-Based Testing Techniques		✓		✓	
3	Experience-Based Testing, Analysis Techniques, Testing Software Characteristics		✓	✓	✓	
4	Functional, Usability and Accessibility, Efficiency Testing			✓	✓	
5	Security and Reliability				✓	✓
6	Maintainability and Portability Testing				✓	✓