



Department of Information Technology		LP: IT16603 Rev. No: 00
B.E/B.Tech/M.E/M.Tech : <u>Information Technology</u> Regulation: 2016		Date: 17/12/2018
PG Specialisation	: NA	
Sub. Code / Sub. Name	: <b>IT16603 – Software Testing and Quality Assurance</b>	
Unit	: I	

**Unit Syllabus: INTRODUCTION TO SOFTWARE TESTING**

Software testing lifecycle, software specifications, program correctness and verification, Failures, errors and faults, testing taxonomy.

**Objective:** In this unit, topics towards understanding mathematical foundations of software testing will be discussed in detail.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Software testing lifecycle	TB-1,Ch-3,(23-26)	LCD/BB
2	The V model of software testing	TB-1,Ch-3,(32-33)	LCD/BB
3	Software specifications	TB-1,Ch-4,(35-37)	LCD/BB
4	Principles of sound specification	TB-1,Ch-3,(37-38)	LCD/BB
5	Reliability Vs Safety	TB-1,Ch-3,(60-61)	LCD/BB
6	State based systems	TB-1,Ch-3,(61-70)	LCD/BB
7	Program correctness and verification	TB-1,Ch-3,(79-94)	LCD/BB
8	Failures, errors and faults, testing taxonomy	TB-1,Ch-3,(101-118)	LCD/BB
9	Fault management, Trouble with hyphenated testing, Classification theme.	TB-1,Ch-3,(125-138)	LCD/BB

**Content beyond syllabus covered (if any):**

\* Session duration: 50 minutes



Sub. Code / Sub. Name: **IT16603 – Software Testing and Quality Assurance**

Unit : II

**Unit Syllabus : TEST DATA GENERATION**

Test generation concepts, Functional and structural criteria, Test Oracle design, Test Driver design, Test outcome analysis.

**Objective:** In this unit, topics towards the comprehending the phases of software testing will be discussed in detail.

Session No *	Topics to be covered	Ref	Teaching Aids
10	Test generation concepts	TB-1,Ch-3,(112-200)	LCD/BB
11	Test generation and target attributes, Outcomes, generations requirement and criteria	TB-1,Ch-3,(112-200)	LCD/BB
12	Functional criteria	TB-1,Ch-3,(112-200)	LCD/BB
13	Domain partitioning, test data generations	TB-1,Ch-3,(112-200)	LCD/BB
14	structural criteria	TB-1,Ch-3,(112-200)	LCD/BB
15	Test Oracle design	TB-1,Ch-3,(112-200)	LCD/BB
16	Test Driver design	TB-1,Ch-3,(112-200)	LCD/BB
17	Test outcome analysis	TB-1,Ch-3,(112-200)	LCD/BB
18	Test outcome analysis	TB-1,Ch-3,(112-200)	LCD/BB

**Content beyond syllabus covered (if any):**

\* Session duration: 50 mins



Sub Code / Sub Name: **IT16603 – Software Testing and Quality Assurance**

Unit : III

### Unit Syllabus : MANAGEMENT OF SOFTWARE TESTING

Metrics for software testing, tools – Scripting tools, record-and-replay tools, performance testing tools, oracle design tools, exception discovery, collaborative tools.

#### Objective:

In this unit, metrics that quantify the aspects of software testing as fault density, error proneness, failure probability, fault tolerance, the ease of identifying faults from static analysis, and the ease of detecting errors at run time, software testing tools and its classifications will be discussed.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Metrics for software testing	TB-1,CH-14 (313 – 332 )	BB / PPT
20	Metrics for software testing	TB-1,CH-14 (313 – 332)	BB / PPT
21	Introduction to Software Testing Tools	TB -1,CH-15 (333)	BB / PPT
22	Scripting tools	TB -1,CH-15 (334-336)	BB / PPT
23	Record-and-replay tools	TB -1,CH-15 (336-338)	BB / PPT
24	Performance testing tools	TB -1,CH-15 (338 – 342)	BB / PPT
25	Oracle design tools	TB -1,CH-15 (342 – 343)	BB / PPT
26	Exception discovery	TB -1,CH-15 (343 -3 45)	BB / PPT
27	Collaborative tools	TB -1,CH-15 (345)	BB / PPT

**Content beyond syllabus covered (if any):**

\* Session duration: 50 minutes



Sub Code / Sub Name: **IT16603 – Software Testing and Quality Assurance**

Unit : IV

**Unit Syllabus: SOFTWARE QUALITY**

Defining Software Quality, Software Quality factors, Components of software quality assurance system, pre project software quality components- Contract Review - Development and Quality Plans, integrating quality activities in project life cycle.

**Objective:** This Unit deals with Need for software quality requirements, Potential contribution of each component, Development and quality plans, the software quality assurance activities conducted throughout the project life cycle, their integration in the development process.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Defining Software Quality	TB-2,CH-2 (15 - 30)	BB / PPT
29	Software Quality factors	TB-2,CH-3 (35-51)	BB / PPT
30	Components of software quality assurance system	TB-2,CH-4 (57-74)	BB / PPT
31	Pre project software quality components Contract review	TB-2,CH-5 (77-87)	BB / PPT
32	Pre project software quality components Contract review	TB-2,CH-5 (77-87)	BB / PPT
33	Pre project software quality components Development and Quality Plans	TB-2,CH-6 (95-106)	BB / PPT
34	Pre project software quality components Development and Quality Plans	TB-2,CH-6 (95-106)	BB / PPT
35	Integrating quality activities in project life cycle	TB-2,CH-7 (121-142)	BB / PPT
36	Integrating quality activities in project life cycle	TB-2,CH-7 (121-142)	BB / PPT

**Content beyond syllabus covered (if any):**

\* Session duration: 50 minutes



Sub. Code / Sub. Name: **IT16603 – Software Testing and Quality Assurance**

Unit : V

**Unit Syllabus : STANDARDS, CERTIFICATION AND ASSESSMENT**

Need for standards, SQA Standards – ISO9001 Certification , bootstrap methodology, SPICE project and process assessment, Organizing for Quality Assurance -Management and its Role in Quality Assurance - SQA Unit & other actors, introduction to Six Sigma.

**Objective:** In this unit, Needs and benefits of Standards, how to implement the quality assurance organizational framework will be discussed.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Need for standards	TB-2, CH-23 (476)	BB / PPT
38	SQA Standards – ISO9001 Certification, bootstrap methodology	TB-2, CH-23 (477,480), (490-492)	BB / PPT
39	SQA Standards – ISO9001 Certification, bootstrap methodology	TB-2, CH-23 (477,480), (490-492)	BB / PPT
40	SPICE project and process assessment	TB-2, CH-23 (492-497)	BB / PPT
41	SPICE project and process assessment	TB-2, CH-23 (492-497)	BB / PPT
42	Organizing for Quality Assurance Management and its Role in Quality Assurance	TB-2, CH-25 (543-551)	BB / PPT
43	Organizing for Quality Assurance Management and its Role in Quality Assurance	TB-2, CH-25 (543-551)	BB / PPT
44	SQA Unit & other actors	TB-2, CH-26 (555-565)	BB / PPT
45	Introduction to Six Sigma.		BB / PPT
<b>Content beyond syllabus covered (if any):</b>			

\* Session duration: 50 mins


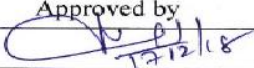
**TEXT BOOKS:**

1. Ali Mili, Fairouz Tchier , “Software Testing: Concepts and Operations”, John wiley & sons, 2015.
2. Daniel Galin, “Software Quality Assurance: From Theory to Implementation”, Pearson Addison-Wesley, Second Edition, 2012.

**REFERENCES:**

1. Jeff Tian, “Software Quality Engineering: Testing, Quality Assurance, and Quantifiable”, Wiley, 2006.
2. Srinivasan Desikan and Gopaldaswamy Ramesh, “Software Testing – Principles and Practices”, Pearson Education, 2006.
3. Ron Patton, “Software Testing”, Second Edition, Sams Publishing, Pearson Education, 2007.

\* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD

	Prepared by	Approved by
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Date	17-12-2018	17-12-2018
Remarks *:		
Remarks *:		

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