Basic Information:

Course Title:	Software Quality Assurance	**Code**	IT-460
Program:	BBIT	**Credit Hours:**	Three (03)
Total Sessions:	30 Classes + Mid Term + Final Term	**Pre-Requisite:**	Software Engineering

Course Description:

This course aims to help in achieving timely, cost-effective and high-quality software through effective software quality control (SQC) and software quality assurance (SQA) practices applied throughout the development cycle. Students will be given knowledge about testing process and over all QA activities as Quality Assurance Process.

Learning Outcomes:

After the completion of this course, it is expected that students who will involve themselves in the knowledge base working of the course will be capable to

✓ *Design the real-world coding problems*
✓ *Identify quality problems.*
✓ *Learn to design and write test cases.*
✓ *Select a quality system road map.*
✓ *Assess the process maturity.*
✓ *Implement the project metrics.*
✓ *Develop the salient points of a quality plan.*

Teaching Learning Methodology:

The formal teaching component of this course consists of active student participation in and contribution to all forms of teaching and learning i.e. lectures, discussions, research assignments and projects. Lectures will be twice a week of 90 min each.

Group Configurations:

Students will form a team of 4 to 6 members. They will choose a running software (website, mobile app, desktop app, game, POS etc.) and the ultimate goal of the team will be to design test scenarios and performing test. Each team must report minimum of ten functional and non-functional defects. The final submission will be a report including test defects and test case execution status and test closure. Teams must demonstrate actual test case execution in presentation. All templates will be provided by the instructor well before start of project.

Weekly Term Plan

Wk	Lecture Topic
01	*Reason to study and Learn SQA*
02	*General Discussion on Errors Failures and causes*
03	*Software Requirements & Quality Requirements*
04	*Software Testing*
05	*Testing Strategies & Testing Classification*
06	*Phases of Testing Process*
07	*Acceptance Criteria and Test Case Designing*
08	***Mid Term Examination***
09	*Test Case execution and Defect Reporting etc.*
10	*SQA as Process*
11	*International Standards of Quality CMMI (detail) ISO 9000 (brief)*
12	*CASE Tools, checklists and Intro to QMS*
13	*Intro to configuration Management*
14	*Metrics to Measure Quality*
15	*Revision*
16	***Final Term Examination***

Topics in Detail

No	Title
01	*Reason to study and Learn SQA, Def. Software Quality*
02	*Intro to Software Quality and its placement in SE process (the flow diagram)*
03	*General Discussion on Errors Failures and causes*
04	*Software Requirements & Quality Requirements*
	(Functional, Nonfunctional, Acceptance)
05	*Brain storming Session*
06	*Software Requirements & Quality Requirements*
07	*Testing Process*
	Testing types and classification
08	*Test Case Writing and designing*
09	*Test case execution and reporting defect*
10	*Closing Testing Phase*
11	*Verification (Software Quality Assurance)*
	Process Defining and Designing Process
12	*CMMI and ISO phases and implementation*
13	*Relating verification and validation*
	Changes in requirements and configuration management as quality process
14	*Testing metrics*
15	*Process verification metrics*
16	*Final Term Examination*

Text & Recommended Readings

A. *Software Quality Assurance from Theory to Implementation*
   Daniel Galin ISBN: 0201709457

B. *Software Testing and Quality Assurance Theory and Practice*
   Naik and Tripadhay

Term Research Assignment Specification

1. *C# Dot Net (load testing demonstration)*
2. *MS Excel for Test Execution Report*
3. *Microsoft Word for Documentation*

Headings	*Arial 11pt Bold*
Normal Text	*Times New Roman 10pt*
Header Footer	*Times New Roman 8pt*
Paragraph	*Single Line Spacing*
	First Line Indent 1.0 cm
Page Margins	*2 cm from each side*

Grading Policy:

Final Grade for this course will be the cumulated result of the following term work with relevant participation according to the quoted percentage.

Sessional	25%		Mid Term	35%		Final Term	40%
Assignments	10 %		Mid Term Exam	25%		Final Exam	30%
Quizzes	10%		Lab Work/ Lab Mid Exam	10%		Case Study/ Project/ Term Paper	10%
Presentations	05%						

Remember subdivision of Mid Term and Final Term Examination should be done only in case of very essential and major Grading Instruments.
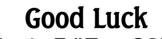
Dishonest Practices & Plagiarism

A student found responsible for dishonest practice/cheating (copying the work of others, use of unauthorized material in Grading Instruments etc.) in relation to any piece of Grading Instrument will face penalties like deduction of marks, grade 'F' in the course, or in extreme cases, suspension and rustication from IBIT.
For details consult Plagiarism Policy of the PU at http://pu.edu.pk/dpcc/downloads/Plagiarism-Policy.pdf

Grading System:

Letter Grade	Grade Point	Num Equivalence
A	4.00	85 – 100 %
A-	3.70	80 – 84 %
B+	3.30	75 – 79%
B	3.00	70 – 74 %
B-	2.70	65 – 69 %
C+	2.30	61 – 64 %
C	2.00	58 – 60 %
C-	1.70	55 – 57 %
D	1.00	50 – 54 %
F	0.00	Below 50 %
I	Incomplete	*
W	Withdraw	*

Norms to Course:

- ✓ *Submission Date and Time for the term instruments is always* **Un-Extendable**.
- ✓ *7 Absentees in class will be result in forced withdrawal.* **(PU Policy)**
- ✓ *Re-sit in Mid and Final Term will cause you a loss of 2 and 3 grade marks respectively.* **(PU Policy)**
- ✓ *This is your responsibility to keep track of your position in class evaluation units.*
- ✓ *After the submission date, NO excuse will be entertained.*
- ✓ ***Keep a copy of all submitted Grading Instruments.***
- ✓ *Assignment is acceptable only in its Entirety.*
- ✓ *No make up for any assignment and quiz.*
- ✓ *Copied & Shared work will score Zero.*
- ✓ *Assignments are Individual.*

Good Luck
For the Fall Term 2019