Unit Code:	*BSD 413*
Unit Title:	*Software Quality Assurance*
Program(s):	*BSE*
Lecturer Name:	*MIRIAM KAARA*
Lecturer Contacts:	*Email: , Phone No: 0722909590*

Course Objectives:

This course aims to:

i. Introduce the concepts of software quality assurance and its components
ii. Understand the activities involved in software quality assurance field
iii. Understand the processes and the framework within software quality assurance field

Course Outcomes:

By the end of this course, the learner should be able to:

i. Identify the fundamental concepts associated with quality and software quality
ii. Identify the unique characteristics of software as product and process
iii. Describe the significance of software quality assurance in software development process
iv. Discuss the attributes, techniques, processes and issues associated with software quality
v. Determine the appropriate standard related to software quality assurance initiative

Course Content

Week	Topic	Sub-Topic	Deliverables
1	**Software Quality Overview**	• Definition of Quality • The Importance of Quality • Quality Assurance (QA) Vs Quality Control (QC) • Quality Assurance at each phase of SDLC	
2		• The SQA Function • Objectives of SQA • The Benefits of SQA Function • SQA Roles and Responsibilities	

		● Management Involvement in Software Quality Assurance	
3	**Managing Software Quality in an Organization**	● The psychology/myths of testing Quality Management System ● (QMS) in Organization ● Expectations from relevant Stakeholders ● Quality Assurance: QMS Evaluation (Adequacy Audit)	
4	**Planning for Software Quality Assurance**	● Software Quality Assurance Plan o Purpose of SQA Plan o Content of SQA Plan o Sample of SQA Plan ● SQA: Organizational Level Initiatives o Managing the software process ▪ Process Management ▪ Standard Process Definition ▪ Software Process Measurement ▪ Defect Prevention ▪ Technology Innovation ● Process Change Management ● Audit	
5	**Product Quality and Process Quality**	● Product Quality o Software Attributes ● Models for Software Product Quality o McCall's Factor-Criteria-Metric Model o The ISO 9126 Standard Quality Model o Other Models for Software Product Quality ● Process Quality o ISO 9001Quality Management for Process Quality Framework	Assignment 1
6	**Software Measurement and Metrics**	● Software Measurement and Metrics ● What is Measurement? ● Why Measure? ● Steps in Measurement ● Attributes of Effective Software Metrics ● Measurement during Software Life Cycle Context	CAT 1

7		● Measurement for Enhancement phase ● Measurement during Construction phase ● Measurement during Testing phase ● Defect Metrics ● Metrics for Software Maintenance	
8	**Classification of Software Metrics**	● Requirements Related Metrics ● Requirements Traceability ● Requirements Stability Index ● Measurement and Process Improvement ● Measurement Scales ● Earned Value Analysis ● Benefits of Measurement and Metrics for Project Tracking and Control	
9	**Inspection & Reviews**	● Why Reviews? ● Structured Walkthroughs ● Inspections ● Roles and Responsibilities involved in Reviews/Inspections ● Making Reviews and Inspection Effective o Inspecting the Entire Work Product o Using Combined Knowledge o Using Different Viewpoints o Improving the Chances for Finding Errors ● Benefits of Review	
10	**Software Configuration Management**	● Configuration Management: What and Why? ● Software Configuration Management Activities ● Standards for Configuration Audit Functions o ISO o CMM o IEEE ● Personnel in SCM Activities	Assignment 2
11	**Standardization of Software**	● What is ISO 9000? ● Why do Organizations Need ISO 9000? ● ISO Certification ● What is CMMI? ● CMMI Model Representation ● Staged Representation	

		• Continuous Representation	
12		• Other Process Improvement Models • IEEE 1074	
13	Revision		CAT 2
14	Exams		

Teaching and learning Methodologies:
Lectures, Presentations by members of the class; Short Case discussions, Assignments, CATs, Lab Practical, Library Reading Assignments

Instructional Materials/Equipment:
Course text, Handouts, Presentation slides, Application Software Installed in the lab (s); Hardware Equipment in computer Lab (s)

Methods of evaluation
Class assignments, take-home assignments, tests, small projects to demonstrate use of software tools

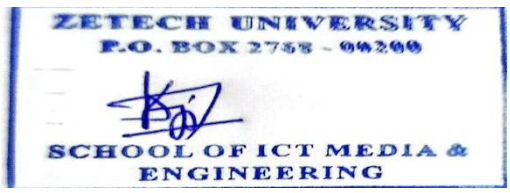
CAT	30%
FINAL EXAM	70%
TOTAL	**100%**

Main Textbooks-journals:

- Nina S Godbole, Software Quality Assurance: Principles and Practice, 4th. Edition, Alpha Science Intenational Ltd. Oxford, UK, 2008
- Galin, Daniel, Software Quality Assurance: From Theory to Implementation Handbook of Software Quality Assurance, by G. Gordon Schulmeyer, James I. Mcmanus. Prentice-Hall,Inc.
- Ince, D. 2014. ISO 9001 and Software Quality Assurance McGraw Hill.
- Burnstein, A. Homyen, T. Suwanassart, G. Saxena, and R. Grom. A Testing Maturity Model for Software Test Process Assessment and Improvement. *Software Quality Professional* , September 2009, pp. 1–8.

NB: Class Attendance is Compulsory

Approved for Circulation by:



David Kanyi
Head, ICT and Engineering Department

Zetech University