



Course description:

This advanced course focuses on techniques for ensuring software quality. Here, quality assurance is viewed as an activity that runs through the entire development process. The course includes: Pre-project software quality components, SQA components in the project life cycle, Software quality infrastructure Components, Management components of software, Quality Standards, certification and assessment, Organizing for quality assurance.

Aims of the course:

Students are expected to

1. Understand quality management processes
2. Distinguish between the various activities of quality assurance, quality planning and quality control.
3. Understand the importance of standards in the quality management process and their impact on the final product.
4. Understand the infrastructure Components for Software quality,

Intended Learning Outcomes: (ILOs)**A. Knowledge and Understanding****A1. Concepts and Theories:****A2. Contemporary Trends, Problems and Research:****A3. Professional Responsibility:****B. Subject-specific skills****B1. Problem solving skills:**

To learn software quality factors

B2. Modeling and Design:

The impact of ISO 9000 and the capability maturity model on software quality and testing will be addressed.

B3. Application of Methods and Tools:

About project process control and software metrics

Critical-Thinking Skills C1. Analytic skills:

Learn how to analyze a problem

C2. Strategic Thinking:

About common software quality strategies.

C3. Creative thinking and innovation:

The student will demonstrate proficiency in managing a software project to customer requirements

General and Transferable Skills (other skills relevant to employability and personal development)

D1. Describe the quality assurance process and its role in software development

D2. About standards and certifications

Course structure:

Week	Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1-3	3	A1, C2, C3	Course Outline – Chapter3: Software quality factors	Presentation methods and techniques, -Lecturing with active participations. -Problem solving. -Cooperative learning. Discussion. -Learning by activities. -Connecting students with different sources of information	Diagnostic tests to identify the students level and areas of weakness Formal (stage) evaluation a) Class Participation b) Exams c) Activities file
4-5	6	A1, B1, B2, C1, C2, C3, D1, D4	Chapter4: The components of the software quality assurance system -The SQA system – SQA architecture - Infrastructure components for error prevention and improvement - Management SQA components - SQA standards, system certification, and assessment components	=	=
6-7	6	A1, B1, B2, B3, C1, C2, C3, D1, D4	Chapter 7: Integrating quality activities in the project life cycle - Classic and other software development Methodologies - Factors affecting intensity of quality assurance activities in the development process	=	=
8	3	A1, B1, B2, B3, C1, C2, C3, D1, D4	Chapter 13: CASE tools and their effect on software quality	=	=



	3	A1, B1, B2, B3, C1, C2, C3, D1, D2, D3, D4		=	=
			Mid Exam		
9	3	A1, B1, B2, B3, C1, C2, C3, D1, D2, D3, D4	Chapter13: - The contribution of CASE tools to software maintenance quality - The contribution of CASE tools to improved project management	=	=
10	3	A1, B1, B2, B3, C1, C2, C3, D1	Chapter17: Corrective and preventive actions - Introduction: the “3S” development team revisited - Corrective and preventive actions – definitions Chapter7: Corrective and preventive actions - Introduction: the “3S” development team revisited	=	=
11	3	A1, B1, B2, B3, C1, C2, C3, D1	Chapter17: The corrective and preventive actions process - Information collection - Analysis of collected information - Development of solutions and their implementation	=	=
12-13	3	A1, B1, B2, B3, C1, C2, C3, D1	Chapter 21: Software quality metrics - Objectives of quality measurement - Classification of software quality metrics - Process metrics 416	=	=
14-15	3	A1, B1, B2, B3, C1, C2, C3, D1	Chapter 21: - Implementation of software quality metrics - Limitations of software metrics - Implementation of software quality metrics - Limitations of software metrics	=	=
16			Final Exam		

References:

A. Main Textbook:

Gillies, A. (2011). *Software quality: theory and management*. Lulu. com.

B. Supplementary Textbook(s):

1. Tian, J. (2005). *Software quality engineering: testing, quality assurance, and quantifiable improvement*. John Wiley & Sons.
2. Daniel Galin, *Software Quality Assurance: From Theory to Implementation*, Addison Wesley, 2003.

Assessment Methods:

Methods	Grade	Date
Mid Exam	30%	specified later
Writing a draught Paper	30%	specified later
Final Examination	40%	specified later

