# CS4348: SOFTWARE QUALITY MANAGEMENT

**Effective Term**
Semester A 2022/23

## Part I Course Overview

**Course Title**
Software Quality Management

**Subject Code**
CS - Computer Science
**Course Number**
4348

**Academic Unit**
Computer Science (CS)

**College/School**
College of Engineering (EG)

**Course Duration**
One Semester

**Credit Units**
3

**Level**
B1, B2, B3, B4 - Bachelor's Degree

**Medium of Instruction**
English

**Medium of Assessment**
English

**Prerequisites**
CS3342 Software Design
or CS3343 Software Engineering Practice

**Precursors**
Nil

**Equivalent Courses**
Nil

**Exclusive Courses**
Nil

# Part II Course Details

**Abstract**

This course aims to equip students with the knowledge and techniques of professional practices in software processes and activities. It prepares students to manage the development of quality software using professional practices and established standards in software quality assurance and management.

**Course Intended Learning Outcomes (CILOs)**

| | CILOs | Weighting (if app.) | DEC-A1 | DEC-A2 | DEC-A3 |
|---|---|---|---|---|---|
| 1 | Explain the relations among software product, process and project in quality assurance and management. | | x | | |
| 2 | Design process and quality models for developing and assessing software products and processes. | | | x | |
| 3 | Describe and apply professional practices in the development of quality software. | | | x | |
| 4 | Describe, compare and critique quality systems and established standards for software products and processes. | | x | | |

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

**Teaching and Learning Activities (TLAs)**

| | TLAs | Brief Description | CILO No. | Hours/week (if applicable) |
|---|---|---|---|---|
| 1 | Lecture | Explain key concepts, models and fundamental issues. Describe and compare professional practices and standards. | 1, 2, 3, 4 | 3 hours per week |
| 2 | Tutorial | Discuss key concepts, models and issues via short questions. Discuss and evaluate techniques and processes via practice with simple exercises. | 1, 2, 3, 4 | 8 hours per semester |

| | | | | |
|---|---|---|---|---|
| 3 | Practice of software quality assurance activities | Require students to perform software quality assurance activities, such as review, inspection, or development of a quality plan that conforms to an established standard. Also require students to report, evaluate and critically reflect on the practices they perform in the activities. | 3 | After class |

**Assessment Tasks / Activities (ATs)**

| | ATs | CILO No. | Weighting (%) | Remarks (e.g. Parameter for GenAI use) |
|---|---|---|---|---|
| 1 | Assignments | 3 | 25 | |
| 2 | Project or quiz | 1, 2, 3 | 15 | |

**Continuous Assessment (%)**

40

**Examination (%)**

60

**Examination Duration (Hours)**

2

**Additional Information for ATs**

For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

**Assessment Rubrics (AR)**

**Assessment Task**

Assignments

**Criterion**

1.1 ABILITY to DESCRIBE and APPLY professional practices in the development of quality software

**Excellent (A+, A, A-)**

High

**Good (B+, B, B-)**

Significant

**Fair (C+, C, C-)**

Moderate

**Marginal (D)**

Basic

**Failure (F)**

Not even reaching marginal levels

**Assessment Task**
Project or quiz

**Criterion**
2.1 ABILITY to ACHIEVE the respective CILOs

**Excellent (A+, A, A-)**
High

**Good (B+, B, B-)**
Significant

**Fair (C+, C, C-)**
Moderate

**Marginal (D)**
Basic

**Failure (F)**
Not even reaching marginal levels

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**Assessment Task**
Examination

**Criterion**
3.1 ABILITY to ACHIEVE the respective CILOs

**Excellent (A+, A, A-)**
High

**Good (B+, B, B-)**
Significant

**Fair (C+, C, C-)**
Moderate

**Marginal (D)**
Basic

**Failure (F)**
Not even reaching marginal levels

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# Part III Other Information

**Keyword Syllabus**
Software quality concepts and models. Quality factors and subfactors. Quality control, assurance and management. Quality assurance activities and practices. Software reviews and inspection. Software management. Software product, process and project. Software life cycle processes, activities and tasks. Project and risk management. Process models. Software quality systems and standards. IEEE standards. ISO standards and certification. Capability Maturity Models Integration (CMMI).

**Reading List**

**Compulsory Readings**

| | Title |
|---|---|
| 1 | D. Galin (2018). Software Quality: Concepts and Practice. 1st Ed. IEEE Computer Society Press. |
| 2 | Selected documents from international software standards: accessible online via CityU library. |
| 3 | Selected articles from IEEE and ACM periodicals: accessible online via CityU library. |

**Additional Readings**

| | Title |
|---|---|
| 1 | I. Sommerville (2016). Software Engineering. Addison-Wesley, 10th edition. |
| 2 | R. Pressman and B.R. Maxim (2015). Software Engineering: A Practitioner’ s Approach. McGraw-Hill, 8th edition. |