Form 2B

City University of Hong Kong

Information on a Course
offered by Department of Computer Science
with effect from Semester B in 2014 / 2015

Part I

Course Title: Software Quality Engineering

Course Code: CS5348

Course Duration: One Semester

Credit Units: 3

Level: P5

Medium of Instruction: English

Prerequisites: *(Course Code and Title)*
CS5351 Software Engineering

Precursors: *(Course Code and Title)*
Nil

Equivalent Courses: *(Course Code and Title)*
Nil

Exclusive Courses: *(Course Code and Title)*
Nil

Part II

1. Course Aims

This course aims to equip students with advanced techniques and knowledge of professional and engineering practices in software processes and activities. It prepares students to develop quality software using proven techniques and established standards in software quality management and engineering.

2. Course Intended Learning Outcomes (CILOs)

Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting (if applicable)
1.	design and critically analyze process and quality models for assessing software products and processes in quality management and engineering;	
2.	describe and apply professional and engineering practices in the development of quality software;	
3.	describe, evaluate and critique quality systems and established standards for software products and processes.	

3. Teaching and Learning Activities (TLAs)

Teaching pattern:
Suggested lecture/tutorial/laboratory mix: 3 hours lecture/tutorial.

CILO No.	TLAs	Hours/week (if applicable)
CILOs 1–4	**Practice of software quality activities** – Students may be required to practise software quality management and engineering activities, such as review, inspection, testing or quality planning. **Case study** – This may involve critical review of the current state of a topic, evaluation of software quality tools, design or analysis of process or quality models, or in-depth study of a practical case in software quality management or engineering. Typically, the work is to be presented orally or by written reports. **Lecture and class discussion** – Lecture delineates the key knowledge and background for the learning of the course materials. Students are required to participate actively in class to share, discuss and critically reflect on their software development practices and experiences in light of the materials learned.	

4. Assessment Tasks/Activities

CILO No.	Type of Assessment Tasks/Activities	Weighting (if applicable)	Remarks
CILOs 1–4	**Coursework** – The CILOs may be assessed by means of exercises, a quiz, or reports on practice of software quality activities, case study, experience sharing or focused discussions. **Exam** – Final exam may include questions to assess students' ability to describe and critically analyze the key concepts, processes and models, apply professional and engineering practices to hypothetical mini-cases, and evaluate quality systems and standards. Students are required to demonstrate critical understanding by applying their knowledge to realistic scenarios.		

5. Grading of Student Achievement:

Examination duration: 2 hours

Percentage of coursework, examination, etc.: 40% CW; 60% Exam

Grading pattern: Standard (A+AA–…F)

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

Part III

Keyword Syllabus

Software quality concepts and models. Quality assurance and management. Software product, process and project. Quality planning. Management review. Quality assurance activities and practices. Software testing strategies and techniques. Software reviews and inspection. Quality systems and standards.

Syllabus

1. Software quality
   Software quality concepts and models. Quality characteristics and properties. Quality assurance and management.

2. Software management
   Software product, process and project. Life cycle processes, activities and tasks. Project and risk management. Quality planning. Management review.

3. Quality engineering
   Quality assurance activities and practices. Verification and validation. Software testing strategies and techniques. Software reviews and inspection.

4. Quality systems and standards
   Software quality system. Software standards and certification. IEEE standards. ISO standards. Capability Maturity Models (CMM).

Recommended Reading:

Text

Main References

Myers, G. J., Badgett, T. & Sandler, C. (2012) The Art of Software Testing. 3rd Ed. Wiley.

Pressman R. S. (2010). Software Engineering: A Practitioner's Approach. 7th Ed. McGraw-Hill.

Sommerville, I. (2011) Software Engineering. 9th Ed. Addison Wesley.

Tian, J. (2005) Software Quality Engineering. Wiley Interscience.

Online Resources

IEEE standards documents: updated versions accessible online via CityU library

CMM documents: accessible online via http://www.sei.cmu.edu/

Selected articles from IEEE Computer, IEEE Software, IEEE IT Professional or other professional periodicals: accessible online via CityU library