Form 2B

City University of Hong Kong

Information on a Course
offered by Department of Computer Science
with effect from Semester A in 2012 / 2013

Part I

Course Title: Software Engineering

Course Code: CS5351

Course Duration: One Semester

Credit Units: 3

Level: P5

Medium of Instruction: English

Prerequisites: Nil

Precursors: Nil

Equivalent Courses: Nil

Exclusive Courses: Nil

Part II

Course Aims

This aim of this graduate-level course is to provide students with a comprehensive understanding of the state-of-art in the software engineering (SE) discipline, its associated processes/methodologies and current trends. This includes in-depth coverage of some of the key SE issues, best practices and guidelines and an overview of project management techniques. The key objective is to equip students with SE knowledge so that they will be able to take full advantage of these concepts, processes, and best practices in their future software development projects.

Course Intended Learning Outcomes (CILOs)
Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting (if applicable)
1.	Explain and contrast the different major SE process models and current trends and select appropriate SE process models for software projects.	
2.	Explain how different SE principles, techniques, best practices, guidelines, etc. are used during different stages of the SE process model and apply them appropriately to create design of good quality software.	

3.	Explain how different project management techniques are used within the SE process model.	
4.	Explain the role and importance of ethics in the SE process.	

Teaching and Learning Activities (TLAs)

(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

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

CILO No.	TLAs	Hours/week (if applicable)
CILO 1–4	**Lectures** – Since this is a graduate-level course, the role of the lectures is mainly to provide a backdrop to guide student's learning. **Tutorials** – Technical questions and study cases are provided to lead students' discussions and practice of various skills in software development. **Reading** – Motivated by the lecture, students will be required to do reading from both assigned material as well as online material that students are required to research on by themselves. Online discussions will be used to help reinforce student learning as well as promote knowledge sharing. **Group Project** – A group project (involving maximum 4 people in a team) gives an opportunity to collaborate and share in their learning process. The group project will be a document deliverable following industry standards or recommendations, including a project plan, analysis of requirements and design of an application software. Selected teams will be required to give a presentation of their work.	

Assessment Tasks/Activities

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

CILO No.	Type of Assessment Tasks/Activities	Weighting (if applicable)	Remarks
CILO 1–4	**Coursework** – In the Group Project, students will be required to justify their choice of the SE process model and apply SE techniques and good practices to design a software. The project will also help students to tackle practical project management issues that arise in the development process. **Quizzes/Mid-Term/Final Exam** – Further assessment will be in the form of quizzes, mid-term, and/or final exam. Students understanding of key SE concepts will be assessed. Questions will be structured so as to prevent pure memorization of standard answers and definitions. Instead, students must demonstrate true knowledge of the subject by		

	their abilities to apply these concepts to different scenarios and justify their answers by contrasting alternatives.		

Grading of Student Achievement: Refer to Grading of Courses in the Academic Regulations for Taught Postgraduate Degrees.

Examination duration: 2 hours

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

Overview of the software engineering discipline. Software engineering process models and trends. Software engineering standards, techniques, best practices, and guidelines. Software project management. Ethics issues in software engineering.

Syllabus

1. **Overview of the Software Engineering Discipline**
   History and overview of the software engineering discipline. Major roles, issues and problems. Current trends and directions.

2. **Software Engineering Process Models and Trends**
   Overview of different SE process models, such as structured analysis and design, object-oriented analysis and design, agile methodologies, and trends. Contrasting and comparing the different models. The individual processes within the process models (such as requirements, implementation, testing, etc.), their roles, issues, deliverables (both diagrams, documents and software), quality management and project management.

3. **Software Engineering Standards, Best Practices, and Guidelines**
   Overview of different SE-related standards, best practices and guidelines, such as those provided by IEEE, ACM, SEI, etc.

4. **Software Project Management**
   Overview of project management concepts as they relate to SE, such as those outlined by PMI (and its PMIBOK), for example scope, schedule development, costing and quality management.

5. **Ethics and Safety Issues in Software Engineering**
   Overview of ethical issues in SE, in particular, the SE Code of Ethics and Professional Practice.

Recommended Reading Text(s)

Main Reference:

Pressman R. S. Software Engineering: a Practitioner's Approach. 6th Ed. McGraw-Hill (2005)

Sommerville I. Software Engineering. 8th Ed. Addison Wesley (2006)

Online Resources

Software Engineering Institute: http://www.sei.cmu.edu/
Project Management Institute: http://www.pmi.org/
IEEE SE Online: http://www.computer.org/portal/site/seportal/
IEEE SE Standards: http://standards.ieee.org/software/
IEEE/ACM SE Code of Ethics and Professional Practice: http://www.acm.org/about/se-code