

Two hours - on line

The exam will be taken on line.  
This paper version is made available as a backup  
In this event, only MCQ answers written in the boxes on the exam paper will be marked.

EXAM PAPER MUST NOT BE REMOVED FROM THE EXAM ROOM

**UNIVERSITY OF MANCHESTER  
SCHOOL OF COMPUTER SCIENCE**

Software Engineering Concepts in Practice

Date: Friday 22nd January 2016

Time: 14:00 - 16:00

---

**Please answer ALL Questions provided**

**The exam contains MULTIPLE CHOICE and SHORT ESSAY QUESTIONS.  
Be sure to answer ALL QUESTIONS.**

---

This is a CLOSED book examination

The use of electronic calculators is NOT permitted

*Q1 - Q23 are multiple choice questions and are therefore restricted.*

24. Briefly (in under 300 words) describe a *specific* scenario where it makes sense for a project to take on some *technical debt*. The scenario should be specific to 1) the nature of the debt (e.g., a class which violates the SRP by having two specific responsibilities), 2) the reason for the debt (i.e., the benefit), and 3) the likely costs of servicing that debt. The scenario can be entirely made up, but should clearly illustrate sensible reasoning about technical debt. Scenarios drawn from your group work or other experience are welcome as well. (5 marks)
25. Software runs the risk of diseconomies of scale (i.e., as the *numbers of units*, say, lines of code, increases, the *unit cost* increases, sometimes dramatically). Sketch an example for how such diseconomies of scale might emerge and how good software engineering practice might alleviate them. (You should aim to discuss at least two distinct practices.) (Your essay should be under 500 words.) (5 marks)
26. In under 500 words, discuss the implications of the fact that *the design (of software) is a wicked problem* **on the** *staging of various project activities* (e.g., problem definition, requirements gathering, architecture, construction, etc.). Concrete examples are encouraged. (6 marks)