CS1TS2 - Software Engineering

Teaching Plan - Version 1.4 December 2002

The course is structured into three themes:

· Software Development as a Process (Autumn Term weeks 2 - 7)

· The Management of Software Development (Autumn 8 -10, Spring 1 - 3)

· Special Techniques (Spring 4 - 9)

It is assumed that the topics in the third theme are largely independent and can be presented in any order. The aim in the first year of this course is to give a broad but not deep view of the entire range of Software Engineering as a subject, ensuring a familiarity with all the subject areas but not necessarily a detailed or practical experience of any of them. The first year can be offered "stand-alone" to those students who require familiarity with Software Engineering but who will not necessarily become practitioners.

The summer term will be used for revision, the completion of any topics requiring more time and the review of the presentations for the second assessment.

In the second year we will reinforce all areas with greater depth and practical exercises.

Chapter references are to Sommerville, 6th Edition.

Autumn Term

Week	***Lecture Topic***	***Chap. Ref***	***Seminar Topic***
1	Introduction, overview, approach and methods	1.1	Expectations of "traditional" engineering
2	Process Models of SE	3.1 - 3.6	Preliminary assignment
3	Requirements Engineering	5	Knowledge Gathering Exercise
4	Formal Methods 1	??	??
5	Formal Methods 2	??	??
6	Formal Methods 3	??	??
7	Formal Methods 4	??	??
8	Systems Architecture	10	Case Study (based on previous seminar)
9	Lower Level Design	14	Review of Preliminary Assignment
10	Implementation & Testing	20	Setting main assessment

Spring Term

Week	*Lecture Topic*	*Chap. Ref*	*Seminar Topic*
1	Operation, Maintenance and Evolution	27	Roles in Software Engineering
2	Project Management & Development Methodologies	4	Project Planning Exercise
3	Estimation & Planning	23	Estimation Exercise
4	Configuration Management	29	Design of a CM setup
5	Risk management	4	Risk analysis of a technical proposal (issued)
6	Quality	24	Review risk analysis + Definitions of quality
7	Process Improvement	25	Process improvement discussion
8	Distributed Systems – Internet Architectures	11 + additional material	Link to e-Business?
9	Distributed Object Architectures	11	Architecture Evaluation Matrix
10	Review of all topics	All above	Special Requests

Assessments

There will be two assessments, only the second of which will count towards course marks (30%). The first assessment will serve to confirm expectations and understanding of the subject area and purpose.

Assessment 1

This will be a group project, set during Autumn Term, Week 2, to be completed by the end of Week 4. The objective will simply be to list the differences between a "program" and a "system". Briefing notes will be provided outlining a scenario of a program that has been developed, needing to be turned into a product. Example roles and role playing hints are also included. Students will be asked to play out the roles, using them to bring out and enumerate the additional characteristics of the "product" and attempt to identify any constraints that such "productisation" might place on the program itself.

Assessment 2

This will be an essay constituting 25% of the course mark and an associated presentation constituting a further 5%. The assessments will be set in Week 6 of

the Autumn Term, for completion by Week 1 of the Summer Term. The students will be asked to choose a significant real world IT Project, to classify it either as a “success” or a “failure” (with evidence) and to describe what Software Engineering Techniques were used on the Project, and in their opinion what techniques should (or should not) have been used.

It is expected that in fact that most students will choose a “failed” project because:

1. There are more of them(!)
2. There tends to be more post project analysis of failed projects than successful ones.

There is thus much more material available for “failed” projects.

Students may also choose to compare and contrast a “successful” and a “failed” project, although it will be pointed out that this will involve twice as much research.

The Week 6 seminar will cover the objective of the assignment and provide pointers to project information in books, newspapers and the internet.