Module Title: **Software Engineering 1**

Module Code: **CS1TS2**
Level: **C**
Providing Department: **Comp. Science**
Number of Credits: **20**

Terms in which taught: **Autumn, Spring, Summer**
Module Convener: **XXXX XXXX**

Pre-requisites: **None**
Co-requisites: **None**
Modules excluded: **None**
Current from: **2002**

**Aims**

This module will provide an overview of the concepts and practice of software engineering, including from viewpoints other than that of the software developer.

It will give an overview of the process by looking at the *System Lifecycle* and the purpose of each stage in the cycle. It will also consider various models and methodologies that are commonly used in software engineering.

It will also cover the practice of software engineering by explaining techniques for systems investigation, systems analysis, the definition of requirements, systems design, testing, implementation, and quality assurance. The course will also cover formal methods of specification.

**Assessable Learning Outcomes**

By the end of the module, it is expected that the student will be able to:

- describe the System Life Cycle, software development phases and approaches and process models
- carry out systems investigation, requirements analysis and formal requirements specification
- carry out data modelling
- use structured design methods, carry out architectural and detailed design, identify the principles of modular design, object-oriented design, and client server systems, including legacy integration.
- use the knowledge gained to analyse requirements and design systems for a variety of given scenarios
- explain the ways in which data and information can be structured.

**Additional Outcomes:**

The module also aims to encourage the development of the following skills:

- understanding a team approach to projects
- experience of problem identification and analysis.

- experience of requirements analysis and technical risk analysis

**Outline Content**

This module is designed to acquaint students with the background information necessary to understand the process of systems investigation, requirements analysis and system specification and to use industry standard techniques to carry out these activities. It will divide into 3 sections:

*The Process of Software Development*

Background knowledge about the System/Software Life Cycle, a description of development phases, process models and methodologies for software development.

*The Management of Software Development*

Techniques used to:

- estimate and plan projects
- identify, analyse and mitigate risks
- assure quality
- improve processes

*Special Techniques*

Principles of:

- design for distributed system
- distributed object architectures
- formal methods of specification

**Brief Description of Teaching and Learning Methods**

Two 1-hour lectures each week and one 1-hour seminar each week. The lectures will cover the theoretical aspects of the subject and the seminars will cover exercises and case studies on the practice.

**Contact Hours**

| | Autumn | Spring | Summer |
|---|---|---|---|
| Lectures | 20 | 20 | 8 |
| Tutorials/seminars | 10 | 10 | 4 |
| Practicals | | | |
| Other contact (e.g. study visits) | | | |

| | | | |
|---|---|---|---|
| Total hours | 30 | 30 | 12 |
| | | | |
| Number of essays or assignments | 1 (report) | 1 (report) | |
| Other (e.g. major seminar paper) | | | 1 (presentation) |

**Assessment:**
There will be two assessments, only the second of which will count towards course marks (30%). The final examination will count for 70% of the course marks.

**Coursework**
*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.

Penalties for late submission of course work will be in accordance with University policy.

**Examinations**

Students will also sit a 2-hour paper that will constitute 70% of the marks overall. This is required to confirm students' knowledge indicated by their contribution to the group project.

**Requirements for a pass**

Students will be required to obtain a mark of 40% overall based on coursework and the examination.

**Re-assessment**

Students will be re-examined in September.