## KentVision Code and title of the module

COMP8860 (CO886) – Software Engineering

## Division and School/Department or partner institution which will be responsible for management of the module

Division of Computing, Engineering and Mathematical Sciences

School of Computing

## The level of the module (Level 4, Level 5, Level 6 or Level 7)

Level 7

## The number of credits and the ECTS value which the module represents

15 credits (7.5 ECTS)

## Which term(s) the module is to be taught in (or other teaching pattern)

Spring

## Prerequisite and co-requisite modules and/or any module restrictions

Pre-requisite:

COMP8820 Advanced Object-Oriented Programming,
or COMP8710 Advanced Java for Programmers

## The course(s) of study to which the module contributes

Compulsory to the following courses:

MSc Computer Science with and without Year in Industry

MSc Computer Science (Cyber Security) with and without Year in Industry

Optional to the following courses:

MSc Computer Science (Artificial Intelligence) with and without Year in Industry

MSc Advanced Computer Science with and without Year in Industry

MSc Artificial Intelligence with and without Year in Industry

MSc Cyber Security with and without Year in Industry

MSc Networks and Security with and without Year in Industry

## The intended subject specific learning outcomes.On successfully completing the module students will be able to:

* 1. Demonstrate a critical understanding of the principles and practice of the development of software systems (broadly defined) including requirements specification, design, validation, implementation and evolution.
	2. Demonstrate a comprehensive understanding of techniques for modelling software systems and their domains.
	3. Demonstrate the ability to design and implement test plans, and apply a wide variety of testing techniques effectively and efficiently, and being able to evaluate their efficacy in identifying a wide range of faults.
	4. Demonstrate the conceptual understanding of planning, documentation, estimation, quality, time, cost and risk evaluation in the business context.
	5. Demonstrate self-direction in the design of software systems, including design simplicity, appropriateness and styles of system thinking and focused problem solving.
	6. Demonstrate critical awareness of the deployment of certain types of software system and show an understanding of the professional duties of software, their societal responsibilities as well as critical understanding of fundamental limitations of different kinds of software systems.
	7. Demonstrate the ability to use state-of-the-art tools and techniques when developing software systems.

## The intended generic learning outcomes.On successfully completing the module students will be able to:

* 1. Demonstrate the ability to work effectively as a member of a team.
	2. Demonstrate effective use of IT facilities.
	3. Demonstrate time management and organisational skills, including the ability to manage one’s own learning and development.
	4. Demonstrate an understanding of the importance of keeping quality procedures under review, to ensure that they fulfil quality objectives cost-effectively, and in a manner understood by the project team.
	5. Analyse a problem specification and to design and implement a solution
	6. Demonstrate an appreciation of the social, ethical and professional issues related to software development.
	7. Demonstrate an appreciation of the importance of continued professional development as part of lifelong learning.

## A synopsis of the curriculum

* Software processes.
* Modelling techniques, and the use of these techniques throughout the project lifecycle.
* Introduction to modelling principles (decomposition, abstraction, generalization, projection/views) and types of models (information, behavioural, structural, domain and functional).
* Risk and risk management in software.
* Approaches to software testing and inspection.
* Approaches to software configuration management.
* Security and privacy in software engineering
* Software engineering tools: configuration control, project management, integrated development environments and modelling tools.

## Reading list

## The University is committed to ensuring that core reading materials are in accessible electronic format in line with the Kent Inclusive Practices.

## The most up to date reading list for each module can be found on the university's [reading list pages](https://kent.rl.talis.com/index.html).

Cohn, M. (2002). User Stories Applied. Addison-Wesley.

Fowler, M (2003). UML Distilled: A Brief Guide to Standard Object Modeling Language. Addison-Wesley.

Sommerville, I. (2015). Software Engineering 10th ed. Addison-Wesley.

Craig, RD. and Jaskie, SP. (2002). Systematic Software Testing. Artech House.

Pezze, M, Young, M. (2007). Software Testing and Analysis: Process, Principles and Techniques. John Wiley & Sons.

McConnell, S. (2004). Code Complete: A Practical Handbook of Software Construction. Microsoft Press.

Hall, EM. (1998). Managing Risk: Methods for Software Systems Development. Addison-Wesley.

Martin, R. (2008). Clean Code: A Handbook of Agile Software Craftsmanship. Prentice Hall.

Brooks, F.P. (1995). The Mythical Man-Month: Essays on Software Engineering. Addison-Wesley Professional.

Ensmenger, N. L. (2010). The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise. The MIT Press.

Slayton, R. (2013). Arguments that Count: Physics, Computing, and Missile Defense, 1949-2012. The MIT Press.

## Contact Hours

Private Study: 107

Contact Hours: 43

Total: 150

## Assessment methods

Main assessment methods

Case Studies, 1000 words (15%)

Group Project, undertaken and assessed on group basis, 40 hours (35%)

Examination, 2 hours (50%)

13.2 Reassessment methods

Like for like

## Map of module learning outcomes (sections 9 & 10) to learning and teaching methods (section 13) and methods of assessment (section 14)

**Module learning outcomes against learning and teaching methods:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 8.5 | 8.6 | 8.7 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 | 9.6 | 9.7 |
| Private study | X | X | X | X | X | X | X |  | X | X |  |  |  |  |
| Lectures | X | X | X | X | X | X |  |  |  | X | X | X | X | X |
| Practical classes |  | X |  |  |  |  | X | X | X |  |  |  |  |  |
| Group project |  | X |  |  |  |  | X | X | X | X |  |  |  |  |

**Module learning outcomes against assessment methods:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Examination | X | X | X | X | X | X |  |  |  |  |  | X |  |  |
| Group project | X | X | X | X | X | X | X | X | X | X | X | X |  |  |
| Case studies |  |  |  |  |  | X |  | X |  | X |  |  | X | X |

## Inclusive module design

The Division recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:

a) Accessible resources and curriculum

b) Learning, teaching and assessment methods

## Campus(es) or centre(s) where module will be delivered

Canterbury

## Internationalisation

The topics addressed by this module relate to a field which is of international importance, given the global role of computers in today's technological innovation. The topics covered by this module are international in nature, being identical worldwide and independent of traditional spoken language.

**DIVISIONAL USE ONLY**

**Module record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

| Date approved | New/Major/minor revision | Start date of delivery of (revised) version | Section revised(if applicable) | Impacts PLOs (Q6&7 cover sheet) |
| --- | --- | --- | --- | --- |
| 17/01/23 | Minor | Sept 2023 | 6,7,12,13 | no |
|  |  |  |  |  |