1. KentVision Code and title of the module

COMP6640 (CO664) Language-based security

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

 CEMS

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

Level 6

## 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)

 Autumn or Spring

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

Prerequisites:

COMP5450 – Functional programming

COMP5580 – Introduction to cyber security

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

Compulsory to the following courses:

BSc Computer Science (Cyber Security), both with and without Year in Industry.

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

8.1 Demonstrate systematic understanding of the logical principles and techniques used for analysing the security properties of programs

8.2 Critically evaluate technical papers on the topic of the module;

8.3 Evaluate how tools and techniques are helpful for software and protocol analysis;

8.4 Understand how security vulnerabilities in software can be exploited.

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

9.1 Apply understanding to perform formal analysis and reasoning about programs

9.2 Communicate effectively with specialist and non-specialist audience

9.3 Present and produce ideas and arguments in the form of well-structured reports

## A synopsis of the curriculum

The module focuses on teaching the foundations of language-based security including but not limited to the use of formal logics, type systems, process calculi and proof carrying code for reasoning about the security properties of programs.

## 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).

## Benjamin C. Pierce. Types and Programming Languages. MIT Press, 2002.

## Glynn Winskel. The Formal Semantics of Programming Languages. MIT Press, 1993.

## Nigel smart. Cryptography made simple. Springer, 2016.

 Matt Bishop. Computer Security: Art and Science. Addison-Wesley, 2003.

## Contact Hours

Private Study: 120

Contact Hours: 30

Total: 150

## Assessment methods

* 1. Main assessment methods

 4 practical assessments (4 x 15%)

 Class presentation (25%)

 Written reports (15%)

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 | 9.1 | 9.2 | 9.3 |
| Lecture | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Classes | **x** | **x** | **x** | **x** | **x** |  |  |
| *Private study* | **x** | **x** | **x** | **x** | **x** | **x** | **x** |

**Module learning outcomes against assessment methods:**

| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 9.1 | 9.2 | 9.3 |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Assessment1* | **x** | **x** | **x** | **x** | **x** |  | **x** |
| *Assessment2* | **x** | **x** | **x** | **x** | **x** |  | **x** |
| *Assessment3* | **x** | **x** | **x** | **x** | **x** |  | **x** |
| *Assessment4* | **x** | **x** | **x** | **x** | **x** |  | **x** |
| *Presentation* | **x** | **x** |  |  |  | **x** |  |
| *Reports* | **x** | **x** | **x** | **x** | **x** | **x** |  |
|  |  |  |  |  |  |  |  |

## Inclusive module design

The Division/Collaborative Partner *(delete as applicable)* 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) |
| --- | --- | --- | --- | --- |
| 01/12/2021 | Major | Sept 2022 | 1,6,8,9,10,11,13,14 | No |
|  |  |  |  |  |