1. KentVision Code and title of the module

COMP8820 (CO882) - Advanced Object-Oriented Programming

## 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)

Autumn

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

Pre-requisite: COMP8810: Object-Oriented Programming

## 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 (Artificial Intelligence) with and without Year in Industry

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

Optional to the following courses:

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:

8.1 Develop non-trivial computer programs following recognized object-oriented principles.

8.2 Critically evaluate the suitability of a commercially-relevant implementation language in the solution of particular problems.

8.3 Describe concepts used in programming and to discuss programming using vocabulary from professional computer science.

8.4 Choose and use appropriate data structures and algorithms in the construction of programs.

8.5 Apply principled design techniques in the construction of software.

8.6 Choose and use appropriate software testing strategies.

8.7 Critically reflect on both the process and outcomes of software creation.

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

9.1 Communicate with other professionals using appropriate technical vocabulary.

9.2 Critically reflect on and evaluate professional practice.

9.3 Write about technical material in an appropriate voice.

9.4 Discover and use professional and technical documentation.

## A synopsis of the curriculum

Building upon Introduction to Object-Oriented Programming, this module covers the design and implementation of high-quality software using OO techniques. Systems are modelled as configurations of objects communicating with one another. Techniques (e.g. inheritance) are introduced which allow objects to play different roles within a system. These two concepts are key to the support for adaptation and reuse that OOP provides. Much emphasis will be placed on gaining a deep understanding of these concepts and applying them in practice by developing programs in Java. The remainder of the module will explore software component frameworks, specifically those that come packaged with Java, placing most emphasis on the frameworks to support the structuring and manipulation of data (data structures and algorithms).

## 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).

Barnes, D.J. and Kölling, M. (2017) Objects First with Java - A Practical Approach using BlueJ (6th Edition): Pearson Education

## Contact Hours

Private Study: 120

Contact Hours: 30

Total: 150

## Assessment methods

* 1. Main assessment methods

Written assessment (individual; 10 hours; 30%)

Two programming assessments (individual; 10 hours each; 70%)

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 |
| Lectures | x | x | x | x | x | x |  |  |  |  |  |
| Classes | x |  |  | x | x | x |  | x | x | x | x |

**Module learning outcomes against assessment 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 |
| Written assessment |  | x | x | x |  |  | x | x | x | x | x |
| Programming assessments with reports | x | x | x | x | x | x | 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) |
| --- | --- | --- | --- | --- |
| 23/11/2021 | Minor | September 2022 | 12,13 | No |
|  |  |  |  |  |