1. **Title of the module**

EENG5780 - Systems Programming

1. **Division or partner institution which will be responsible for management of the module**

Computing, Engineering and Mathematical Sciences

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 5

1. **The number of credits and the ECTS value which the module represents**

15 credits (7.5 ECTS)

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

Autumn and Spring

1. **Prerequisite and co-requisite modules**

None

1. **The courses of study to which the module contributes**

BEng in Electronic and Computer Engineering with a Foundation Year

BEng/MEng Electronic and Computer Engineering

BEng/MEng Electronic and Computer Engineering with a Year in Industry

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

8.1 Explain the differences between various datatypes in an Object Orientated language and select the relevant type for a given programming task.

8.2 Explain the basic concepts of Object-Oriented Programming and give examples of appropriate uses of classes and objects.

8.3 Independently find online information about external library modules and apply this information to solve a specific task.

8.4 Interface Object Orientated programmes with standardised hardware.

8.5 Test solutions to programming problems.

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

9.1 Demonstrate IT skills for graduate employment

9.2 Communicate more effectively using a variety of methods.

9.3 Use a range of techniques to undertake critical analysis of information, and propose solutions.

9.4 Exercise personal responsibility and manage their time and resources.

1. **A synopsis of the curriculum**

This module provides both a broad and deep understanding of Object Orientated program design and implementation within a system. Reinforcement of foundational material is through its use in both understanding and working with a range of fundamental data structures and algorithms. More systems-based understanding, such as interfacing to physical hardware are covered. This allows for a systems application-level view of design and implementation to be explored. Throughout the course, the quality of application design and the need for a professional approach to software development is emphasised.

1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**

* Mark Lutz, Learning Python: Powerful Object-Oriented Programming ,2013
* Nicholas H.Tollervey Programming with MicroPython: Embedded Programming with Microcontrollers and Python, 2017

1. **Learning and teaching methods**

Total contact hours: 36

Private study hours: 114

Total study hours: 150

1. **Assessment methods**
   1. Main assessment methods

* Three Homeworks (5 pages at 20% each)
* Mini-project ( 10-minute presentation and 5 page report, 40%)

13.2 Reassessment methods

Like-for-like

1. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *8.5* | *9.1* | *9.2* | *9.3* | *9.4* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |
| Lectures | x | x |  |  | x |  |  |  |  |
| Practical classes | x | x | x | x | x | x |  | x | x |
| Private study | x | x | x | x | x | x | x | x | x |
| **Assessment method** |  |  |  |  |  |  |  |  |  |
| Homeworks | x | x | x | x | x | x | x | x | x |
| Mini-project | x | x | x | x | x | x | x | x | x |

1. **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

1. **Campus(es) or centre(s) where module will be delivered**

Canterbury

1. **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 OFFICE USE ONLY**

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

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| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| September 2020 | New Module | 2022/23 | All-new module | Yes |
|  |  |  |  |  |