1. **Title of the module**

EENG0033 (EL033) - Engineering and Programming Skills

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 3

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**

No Prerequisites

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

* BEng Electronics and Communications Engineering with a Foundation Year
* BEng Computer Systems Engineering with a Foundation Year
* BEng Bio-Medical Engineering with a Foundation Year
* BEng Mechanical Engineering with a Foundation Year

1. **The intended subject specific learning outcomes.  
   On successfully completing the module students will be able to:**
2. Programme a microcontroller to perform simple engineering tasks.
3. Construct, test and report on an electronic or mechanical project.
4. **The intended generic learning outcomes.  
   On successfully completing the module students will be able to:**

1. Analyse, present and interpret data.

2. Communicate more effectively using calculations, graphical methods, and writing.

1. **A synopsis of the curriculum**

In order to support laboratory experiments to be performed in other modules a short series of lectures on report writing and experimental error analysis is included.

A series of lectures will introduce a microcontroller and its programming language in an informal way. The aim is to enable the student to input and output signals to a microcontroller to control simple actuators. The programming skills will be developed in a series of non-assessed and assessed laboratory based assignments where students will be presented with a pre-written programme and they will be asked to make changes to achieve a change in its operation.

Also included in this module is an assigned mini project that can either be electronic or mechanical in nature depending on the preference of the student. Students are expected to build, test and report on the operation of the project and make suggestions for its improvement.

A short series of lectures which introduce students to University study.

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

* Monk S. (2012) Programming Arduino Getting started with Sketches, London: McGraw Hill

1. **Learning and teaching methods**

Total contact hours: 36

Private study hours: 114

Total study hours: 150

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

1 x Error Analysis Assignment (15%)

2 x Programming Assignments (20% each)

Construction Exercise (15%)

Mini Project 30%

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 | 9.1 | 9.2 |
| **Learning/ teaching method** |  |  |  |  |
| Lab support lectures |  |  | **x** | **x** |
| Programming lectures | **x** |  |  |  |
| Programming (non-assessed sessions) | **x** |  |  |  |
| Construction Lab |  | **x** |  |  |
| Private Study | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |
| Error analysis assignment |  |  | **x** | **x** |
| Construction exercise |  | **x** |  |  |
| Programming (assessed sessions) | **x** |  |  |  |
| Project | **x** | **x** |  |  |

1. **Inclusive module design**

The School 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**

Internationally recognised components, symbols, units, names and engineering terms are used throughout this module.

Specifically, the International System of Units (SI or Système international (d'unités)) is used throughout this module.

**DIVISIONAL USE ONLY**

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
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