***Note:*** *This sheet does not form part of the specification and will not be published. The information on this sheet provides contextual and supporting information for the approval process and should provide answers to questions that commonly arise in the consideration of new and revised modules. Please type directly into the form, boxes will expand as needed.*

***NB: specifications with errors in formatting, typos and/or incorrect or incomplete templates will not be considered for approval until corrected.***

***For new modules complete Section A and for revised modules complete Section B. Complete Section C for any new/revised modules.***

***Section A – for new modules only***

| **Question** | **Answer** |
| --- | --- |
| 1. Title of module |  |
| 1. State which stage this module will be applicable to (information required by KentVision) |  |

***Section B – for revised modules only***

| **Question** | **Answer** |
| --- | --- |
| 1. Module Code | EENG5150 |

| 1. Please indicate which sections of the specification have been revised. NB the approval panel will look at the whole specification and may comment on sections that have not been revised in this submission | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 4 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |

***Section C – must be completed for all modules***

| **Question** | **Answer** | |
| --- | --- | --- |
| 1. Is this module (or any consequently withdrawn modules) compulsory in any courses? | | Tick if yes |
| 1. Does the introduction of this module, or the withdrawal of other modules, potentially require changes to those courses? | | Tick if yes |
| 1. If so, are those potential changes the result of:   (i) Changes to the Learning Outcomes of this module? | | Tick if yes |
| (ii) Changes to the term(s) in which this module is delivered? | | Tick if yes |
| (iii) Changes to pre- and co-requisite modules? | | Tick if yes |
| (iv) Other (please specify) | |  |
| 1. If the answer to any of questions 5 to 7 is Yes - confirm that all the owners of the courses listed in section 7 of the specification have been informed | | Tick if yes |
| 1. Will any modules be withdrawn as a result of the introduction of this module to the module? *If yes, please provide the module code and title and information required (see* [*Annex B of the Code of Practice*](https://www.kent.ac.uk/education/regulatory-framework/codes-of-practice-for-taught-courses#annex-b)*)* | |  |
| 1. Are there any implications for learning resources, including staff, library, IT and space? If yes, please confirm the Division has considered and planned for the allocation of the resources required | | Tick if yes |
| 1. Term and year the new module will start | | 2023/24 |
| 1. Date this version of the module specification was approved by the Board of Studies | |  |
| 1. Rationale: please provide any contextual information that will assist members of the approval panel who may not be familiar with the discipline and custom and practice in your Division | Coursework weighting stays at 20%, Lab report missed in error at Summer 2023 expediated process | |
| 1. Please provide any additional information that may assist the approval panel, for example the rationale for assessment or an explanation of the learning and teaching methods if these vary from a commonly seen pattern |  | |
| 1. High risk of non-delivery: confirm that more than one person is available to teach this module and that the Divisional Plan includes consideration of resources, cover and succession planning |  | |
| 1. Division to confirm that consideration has been given to the title and curriculum description to ensure these are not overly constraining | | Tick if yes |
| 1. Does the change to the module represent a change to CMA ‘material information’? | | Tick if yes |
| 1. Please outline what changes are being proposed to the CMA material information and what steps are taken by the Division to minimise the disruption |  | |

1. **Title of the module**

EENG5150 (EL515) Physiological Measurement

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 or Spring

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

Pre-requisites:

EENG3050 Introduction to Electronics

EENG3190 Engineering Analysis

BIOS3070 Human Anatomy and Physiology I

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

BEng Biomedical Engineering

BEng Biomedical Engineering with a Year in Industry

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

1. Demonstrate an understanding of the principles of physiological measurement and instrument design.

2. Demonstrate knowledge of specific examples of physiological parameters and their measurement.

3. Demonstrate the necessary skills to design and analyse electronic instruments.

4. Develop an appreciation of the regulatory and safety issues relating to medical devices.

1. **The intended generic learning outcomes.  
   On successfully completing the module students will be able to:**
2. Analyse, interpret and present experimental data in written form.
3. **A synopsis of the curriculum**

This module consists of a series of coherent lectures and practical classes. Technical topics covered in the module include basic error analysis, general principles of measurement and instrumentation, sensing devices, AC circuits, electronic devices and circuits, medical devices, physiological signals, signal conditioning and data presentation elements. The students are taught to understand the role of the various elements of a medical instrumentation system and to specify and evaluate a measurement system for medical applications.

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

Recommended Reading

Medical Instrumentation Application and Design

John G, Webster (Ed)

John Wiley & Sons; 4th Edition (6 Feb 2009)

ISBN-10: 0471676004

ISBN-13: 978-0471676003

Background Reading

Introduction to Electrocardiography

Leo Schamroth

Blackwell Science Ltd; 4th Revised edition (Sep 1971)

ISBN-10: 0632084405

ISBN-13: 978-0632084401

An Introduction to the Physiology of Hearing

James O. Pickles

BRILL; 4th Revised edition (5 April 2013)

ISBN-10: 9004243771

ISBN-13: 978-9004243774

1. **Learning and teaching methods**

Total contact hours: 40

Private study hours: 110

Total study hours: 150

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

* Exam 2 hours 80%
* Lab Report 10%
* Assignment 1 5%
* Assignment 2 5%

13.2 Reassessment methods

Reassessment instrument:

* Exam 80%
* Lab Report 10%
* Assignment 1: 5%
* Assignment 2: 5%

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 | 9.1 |
| **Learning/ teaching method** |  |  |  |  |  |
| Private Study | **x** | **x** | **x** | **x** | **x** |
| Lectures | **x** | **x** | **x** | **x** |  |
| Example classes | **x** | **x** | **x** |  | **x** |
| **Assessment method** |  |  |  |  |  |
| Exam | **x** | **x** | **x** | **x** |  |
| Assignments | **x** | **x** | **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 books are used as references to deliver materials presented in this module. Internationally developed and recognised notations and mathematics models will also be used in delivering this module.

**DIVISIONAL SUPPORT 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.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| July 2023 | MAJOR | September 2023 | 13.2 |  |
|  |  |  |  |  |