1. Title of the module

EENG3011 Biomedical Engineering Skills

## Division or partner institution which will be responsible for management of the module

Computing, Engineering and Mathematical Sciences

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

Level 4

## 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 Term (Term 1)

## Prerequisite and co-requisite modules

None

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

BEng Biomedical Engineering with a foundation year

BEng Biomedical Engineering

BEng Biomedical Engineering with a year in industry

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

8.1. The major physiological systems of the human body.

8.2. The fundamentals of biomedical skills.

8.3. The principles of design processes.

8.4. The principles of CAD based drawings/models, and product manufacturing tools.

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

9.1 Generate, analyse, present and interpret data

9.2 Communicate more effectively using a variety of methods

9.3 Make judgements using basic theories

9.4 Manage their time and resources within a task.

## A synopsis of the curriculum

**Physiological Systems of the Human Body:**

Students will gain understanding of all the prerequisites for physiology and disease. This will include: Cell structure and function; Cell differentiation and body tissues; Organ systems of the body including: Musculoskeletal system; Circulatory system; Immune system; Digestive system; Urinary system and excretion; Endocrine and Nervous systems.

**Biomedical Skills:** The understanding of solutions and dilutions; acids, bases and buffers; kinetics; microscopy and simple microbial detection (cell staining and counting); bioinformatics and biological sequence analysis; MATLAB ® and R programming for the biosciences.

**Engineering Design:** Transformation of a client requirement into an engineering design statement, Decomposition and evaluation of design requirements. Consideration of the human and ergonomic factors in the design process. CAD based drawings and models via CAD tools. Realisation of CAD models using computer numerical control manufacturing machines.

## 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).

## Contact Hours

34 contact hours comprising lectures, laboratory classes and example classes

116 hours private study

Total hours for the module: 150 hours

## Assessment methods

* 1. Main assessment methods

## 100% Coursework

## Assignment (35%)

## Lab report (40%)

## Presentation (25%)

14.2 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 and assessment methods:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** |  | *8.1* | *8.2* | *8.3* | *8.4* | *9.1* | *9.2* | *9.3* | *9.4* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |
| **Private Study** |  | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Lectures |  | **x** | **x** | **x** | **x** |  |  | **x** | **x** |
| Example classes |  | **x** | **x** | **x** |  | **x** | **x** | **x** | **x** |
| Labs |  | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |
| Assignment |  | **x** | **x** |  | **x** | **x** | **x** | **x** | **x** |
| Lab report |  | **x** | **x** | **x** |  | **x** | **x** | **x** | **x** |
| Presentation |  |  |  | **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

Internationally recognised books are used as reading material for this course.

Engineering is an international discipline with techniques developed and refined by scientists across the globe. Mastery of the subject-specific learning outcomes, will equip students to apply the theories and techniques of this module in a wide range of international contexts. The module will use internationally developed and recognised notation and mathematics models of mechanical systems. The module team includes many members of staff with international experience of teaching and research collaboration. In compiling the reading list, consideration has been given to the range of texts that are available internationally and a selection of texts has been identified to complement the delivery of the material. The support provided to the students is also internationally attuned given our international student body.

**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) |
| --- | --- | --- | --- | --- |
| 15/11/2021 | Major- New module | Autumn 2022 |  |  |
|  |  |  |  |  |