1. **Title of the module**

EENG3230 (EL323) Engineering Design and Mechanics

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 4

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)**

Term 1

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

None

1. **The course(s) of study to which the module contributes**

BEng Mechanical Engineering with a foundation year

BEng Mechanical Engineering

BEng Mechanical Engineering with a year in industry

BEng 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

BEng Biomedical Engineering with a foundation year

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 have knowledge and understanding of:**
   1. The fundamental principles of mechanics and their mathematical description.
   2. The method of solving problems involving particles and extended bodies.
   3. The principles of design processes.
   4. The principles of CAD based drawings/models, and product manufacturing tools.
2. **The intended generic learning outcomes.  
   On successfully completing the module students will be able to:**
   1. Generate, analyse, present and interpret data
   2. Communicate more effectively using a variety of methods
   3. Make judgements using basic theories
   4. Manage their time and resources within a task.
3. **A synopsis of the curriculum**

**Mechanics:** Forces, moments and Equilibrium of rigid bodies, Work and energy, Elementary stress-strain analysis.

**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.

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

* Engineering Mechanics: Statics – By: Michael Plesha, Gary Gray and Francesco Costanzo; McGraw-Hill Education; Second Edition, 2012. ISBN-13: 978-0073380292.
* Mechanical Engineering Design: Principles and Concepts – By: Siraj Ahmed; PHI Learning, 2014. ISBN-13: 978-8120349315.
* Autodesk Fusion 360: A Power Guide for Beginners and Intermediate Users Paperback – 2018. ISBN-13 : 978-1720851479.

1. **Learning and teaching methods**

contact hours 34 hours

private study 116 hours  
Total hours for the module: 150

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

Exam, 2 hours (60%)  
Homework, five A4 pages (15%)  
Presentation, 15 minutes (25%)

* 1. 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* | *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** | **x** | **x** |
| Example classes |  | **x** | **x** | **x** |  | **x** | **x** | **x** | **x** |
| Labs |  | **x** | **x** | **x** | **x** |  |  | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |
| Exam |  | **x** | **x** |  | **x** | **x** | **x** | **x** | **x** |
| Homework |  | **x** | **x** | **x** |  | **x** | **x** | **x** | **x** |
| Presentation |  |  |  | **x** | **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 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 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) |
| 15/10/2020 | Minor | Sept 2021 | 1, 7, 9, 11, 13, 14, 17 | No |
|  |  |  |  |  |