1. **Title of the module**

PHYS0023 (PH023) - Motion and Mechanics

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

Physical 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)**

Spring

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

None

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

Physics Foundation Year

This is not available as a wild module.

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

Have:

1. Knowledge and understanding of Physical laws and principles, and their application to diverse areas of physics including laws of motion, and covering the necessary mathematics. (A1)
2. An ability to identify relevant principles and laws when dealing with problems, and to make approximations necessary to obtain solutions. (B1)
3. An ability to solve problems in physics using appropriate mathematical tools. (B2)
4. An ability to use mathematical techniques and analysis to model physical behaviour. (B4)
5. Subject-specific skills:
6. An ability to present and interpret information graphically. (C2)
7. An ability to make use of appropriate texts, or other learning resources as part of managing their own learning. (C6)
8. **The intended generic learning outcomes.
On successfully completing the module students will be able to:**

Have a knowledge and understanding of:

1. Transferable skills:
2. Problem-solving skills, an ability to formulate problems in precise terms and to identify key issues, and the confidence to try different approaches in order to make progress on challenging problems. Numeracy is subsumed within this area. (D1)
3. Analytical skills – associated with the need to pay attention to detail and to develop an ability to manipulate precise and intricate ideas, to construct logical arguments and to use technical language correctly. (D4)
4. Personal skills – the ability to work independently, to use initiative, to organise oneself to meet deadlines and to interact constructively with other people. (D5)
5. **A synopsis of the curriculum**

Mechanics is concerned with the behaviour of physical bodies when subjected to forces or displacements. The course will introduce terminology via the topics of units, dimensions, and dimensional analysis. The motion of objects will be studied in terms of distance, velocity, and acceleration time graphs. Then the role of forces in causing motion will be studied under the topics of Newton's Laws of Motion and Friction. The relationship between forces and energy will be introduced in terms of Work and Power, which will be connected to the topics of potential energy, kinetic energy, and Conservation of energy. The topic of Linear momentum will be introduced in order to study Conservation of linear momentum. The course will then study Circular motion and Rotational systems in relation to topics such as moment of inertia and torque. The case of gravitational force will be studied to illustrate topics of force fields and potential energy in force fields.

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

New Understanding Physics for Advanced Level, 4th edition, by J. Breithaupt (2000)

1. **Learning and teaching methods**

Total contact hours: 24

Private study hours: 126

Total study hours: 150

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

Assignment, 2 hour (15%)

Moodle quiz, 45 minutes (15%)

Exam, 2 hours (70%)

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* | *8.6* | *9.1* | *9.2* | *9.3* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |
| **Private Study** |  |  |  |  | **X** | **X** | **X** | **X** | **X** |
| *Lectures* | **X** | **X** | **X** | **X** |  |  |  |  |  |
| **Assessment method** |  |  |  |  |  |  |  |  |  |
| *Assignments* | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| *Examination* | **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**

Physics is an international subject with physical laws discovered and techniques developed and refined by Physicists 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 team is drawn from the School of Physical Sciences, which 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 SPS provides to its students is also internationally attuned given our international student body.

**FACULTIES 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) |
| 10/07/2019 | Minor | September 2019 | 13, 14 |  |
|  |  |  |  |  |