1. **Title of the module**

PHYS5880 (PH588) - Mathematical Techniques for Physical Sciences

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 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

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

Prerequisites:

PHYS3110 Mathematics I

PHYS3120 Mathematics II

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

All Physics programmes.

1. **The intended subject specific learning outcomes.
On successfully completing the module students will be able to:**
2. Solve problems in physics using appropriate mathematical tools.
3. Present and interpret information graphically.
4. Make use of appropriate texts, or other learning resources as part of managing their own learning.
5. **The intended generic learning outcomes.
On successfully completing the module students will be able to:**
6. Formulate problems in precise terms and to identify key issues, and have the confidence to try different approaches in order to make progress on challenging problems. Numeracy is subsumed within this area.
7. Pay attention to detail and manipulate precise and intricate ideas.
8. Construct logical arguments and use technical language and demonstrate numeracy.
9. **A synopsis of the curriculum**

The module will provide a firm grounding in mathematical methods: both for solving differential equations and, through the study of special functions and asymptotic analysis, to determine the properties of solutions.

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

Core Text:

* M Boas Mathematical Methods in the Physical Sciences (3rd ed., Wiley, 2005) ISBN: 978-0-471-36580-8

Suggested additional reading:

* Introduction to Mathematical Physics by Chun Wa Wong, Oxford University Press (2013)
* Mathematics for Physics by M M Woolfson and M S Woolfson, Oxford University Press (2007)
* E. Kreyszig, Advanced Engineering Mathematics, John Wiley and sons (2011)
* W. Bolton, Fourier Series, Longman Technical (1994)
1. **Learning and teaching methods**

Total contact hours: 36

Private study hours: 114

Total study hours: 150

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

Problem Solving 1 (10 hour 15%)

Problem Solving 2 (10 hour 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* | *9.1* | *9.2* | *9.3* |
| **Learning/ teaching method** |  |  |  |  |  |  |
| Private Study | **X** | **X** | **X** | **X** | **X** | **X** |
| Contact Hours | **X** | **X** | **X** | **X** | **X** | **X** |
| **Assessment method** |  |  |  |  |  |  |
| Problem sheets | **X** | **X** | **X** | **X** | **X** | **X** |
| Examination | **X** | **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**

Physics is an international subject with laws of physical sciences discovered and techniques developed and refined by physical scientists across the globe. Mastery of the subject-specific learning outcomes in this module will equip students to apply the learned theories and techniques in a wide range of international contexts. In compiling the reading list, consideration has been given to the range of texts that are available internationally. The support SPS provides to its students is also attuned to 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 delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| 01/05/2020 | Minor | September 2020 | 10, 12 |  |
|  |  |  |  |  |