1. **Title of the module**

PS700/PSCI7000 Physical Science Research Investigation

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

SPS

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

7

1. **The number of credits and the ECTS value which the module represents**

15 (7.5 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Term 1 and 2

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

None

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

Physics, Physics with Astrophysics, Astronomy Space Science and Astrophysics (MPhys, MPhys with Year Abroad). MSci Forensic Science programme, MSci Forensic Chemistry programme, Forensic Science - MSc - full-time at Canterbury). Physics MSc (Euromasters) - full-time at Canterbury

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:**

Demonstrate an ability to identify relevant principles and laws when dealing with problems, and to make approximations necessary to obtain solutions.

* 1. Demonstrate an ability to execute and analyse critically the results of an experiment or investigation and draw valid conclusions.  To evaluate the level of uncertainty in these results and compare them with expected outcomes, theoretical predictions or with published data; thereby to evaluate the significance of their results in this context.
	2. Demonstrate competent use of appropriate C&IT packages/systems for the analysis of data and the retrieval of appropriate information.
	3. Demonstrate an ability to present and interpret information graphically.
	4. Demonstrate an ability to communicate scientific information, in particular to produce clear and accurate scientific reports.
	5. Demonstrate an ability to make use of appropriate texts, research-based materials or other learning resources as part of managing their own learning.
	6. MPhys/MSci/MSc students:- Demonstrate an ability to communicate complex scientific ideas, the conclusion of an experiment, investigation or project concisely, accurately and informatively.
	7. MPhys/MSci/MSc students:- Demonstrate an ability to make use of research articles and other primary sources.
1. **The intended generic learning outcomes.
On successfully completing the module students will be able to:**
	1. Demonstrate investigative skills in the context of independent investigation including the use of textbooks and other available literature, databases, and the interaction with colleagues to extract important information.
	2. Demonstrate communication skills in the area of dealing with surprising ideas and difficult concepts, including listening carefully, reading demanding texts and presenting complex information in a clear and concise manner. C&IT skills are an important element to this.
	3. Demonstrate 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.
	4. Demonstrate personal skills – the ability to work independently and as part of a group, to use initiative, to organise oneself to meet deadlines and to interact constructively with other people.
	5. Demonstrate self-direction and originality in applying and adapting problem-solving skills to unfamiliar, complex and open-ended situations.
	6. Demonstrate the independent learning ability required for continuing professional development.
	7. Establish advanced research skills needed at a postgraduate level or graduate level in other sectors.
	8. Demonstrate the capacity to undertake advanced scientific investigations, advanced problem solving and data analysis in a research environment.
2. **A synopsis of the curriculum**

Students will develop a number of skills related to the investigation and planning of research such as analytical skills, critical thinking and ability to understand and communicate scientific information in graphically. Students will learn how to search and retrieve information from a variety of locations (colloquia, websites, journals, proceedings etc). They will learn how to compile professionally-produced scientific documents such as colloquia reports, posters and applications for funding of future research activities/research job applications. The Group research investigation strengthens these skills, adding experience of working in a team.

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

 *http://www.epsrc.ac.uk/*

 [*http://www.scitech.ac.uk*](http://www.scitech.ac.uk)

 *On writing proposals:* . [*https://www.epsrc.ac.uk/funding/howtoapply/preparing*](https://www.epsrc.ac.uk/funding/howtoapply/preparing)

*FOR WRITING A FUNDING PROPOSAL*

 [*http://www.learnerassociates.net/proposal/*](http://www.learnerassociates.net/proposal/)

 [*http://www.learnerassociates.net/proposal/*](http://www.learnerassociates.net/proposal/)

1. **Learning and teaching methods**

Total contact hours 35

Private study time 115

Total study hours 150

1. **Assessment methods**

100% coursework. The coursework assesses student’s familiarity with and ability to implement current research methods. Preparation of their coursework will require independent, original problem solving while planning carefully for the time available and to present their work in a professional manner.

Colloquium Report 1 (10 hours) 20%

Colloquium Report 2 (10 hours) 20%

Application outline (4 hours) 10%

Group Research Project (30 hours) 40%

Poster Presentation of Project (10 hours) 10%

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* | *8.7* | *8.8* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |
| *Lectures* | **x** | **x** |  | **x** |  |  | **x** |  |
| *Project supervision* | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| *Self-studies* | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |
| *Colloquium reports (2)* |  | **x** |  |  | **x** | **x** | **x** | **x** |
| *Application outline* |  |  | **x** |  |  | **x** | **x** |  |
| *Poster* | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| *Group report* | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *9.1* | *9.2* | *9.3* |  *9.4* | *9.5* | *9.6* | *9.7* | *9.8* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |
| *Lectures* |  | **x** | **x** |  | **x** | **x** | **x** | **x** |
| *Project supervision* | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| *Self-studies* | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |
| *Colloquium reports (2)* | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| *Application outline* | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| *Poster* | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| *Group report* | **x** | **x** | **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**

The Physical Sciences are international subjects with physical and forensic laws with new techniques discovered, 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. 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) |
| 01/05/2020 | Minor | September 2020 | 10, 12, 13 |  |
|  |  |  |  |  |