1. KentVision Code and title of the module

PSCI6040 – Topics in Functional Materials

## Division and School/Department or partner institution which will be responsible for management of the module

Division of Natural Sciences (Chemistry and Forensic Science)

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

Level 6

## 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)

Spring

## Prerequisite and co-requisite modules and/or any module restrictions

None

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

Optional for the following courses:

BSc (Hons) Chemistry

MChem Chemistry

BSc (Hons) Forensic Science

MSci Forensic Science

MSc Forensic Science

Not available as an elective module

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

8.1 Demonstrate a systematic understanding of key aspects of some current topics of interest in materials research.

8.2 Understand techniques applicable for chemical and physical characterisation methods of materials.

8.3 Show a critical awareness of the applications of materials in industry.

8.4 Demonstrate systematic understanding of knowledge relating to materials.

8.5 Apply their knowledge to solve problems in materials.

8.6 Understand the underlying phenomena of the electronic structure of materials.

8.7 Demonstrate a strong appreciation of the key driving forces in materials science and knowledge of selected important functional materials.

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

9.1 Solve problems, in the context of problems with well-defined solutions, extending to situations where evaluations have to be made on the basis of incomplete information.

## A synopsis of the curriculum

Chemists and physicists are now playing an important role in the growing field of materials research. More recently, there has been a growing interest, driven by technological needs, in materials with specific functions and this requires a combination of physics and chemistry. For example, new materials are needed for the optics and electronics industry (glasses and semiconductors). The aim of this module is to introduce students to this area of modern materials and associated techniques. Examples of the topics that might typically be covered are: Crystals and crystallography; Molecular materials; Glasses; Magnetism and Magnetic Materials; Multiferroics; X-ray absorption spectroscopy (XAS).

## 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

Private Study: 128

Contact Hours: 22

Total: 150

## Assessment methods

13.1 Main assessment methods

* Assignment 1 (4 pages) – 10%
* Assignment 2 (4 pages) – 10%
* Examination (3 hours) – 80%

13.2 Reassessment methods

* Like-for-like

## Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section 12) and methods of assessment (section 13)

**Module learning outcomes against learning and teaching methods:**

| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 8.5 | 8.6 | 8.7 | 9.1 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Private Study | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Lecture | **x** | **x** | **x** | **x** | **x** | **x** | **x** |  |

**Module learning outcomes against assessment methods:**

| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 8.5 | 8.6 | 8.7 | 9.1 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Assignments x 2 | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| Examination | **x** | **x** | **x** | **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

Science is an international discipline with widely applicable international resonance. This module presents subject-specific knowledge generated, developed, and refined by scientists around the world. Mastery of the learning outcomes will equip students to apply the knowledge in a wide range of international contexts and these will be addressed in making the content relevant to current global issues. The Division of Natural Sciences is an international community of students and staff and group activities and teaching will provide a platform for internationally-focussed discussion.

**DIVISIONAL USE ONLY**

**Module record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

| Date approved | New/Major/minor revision | Start date of delivery of (revised) version | Section revised  (if applicable) | Impacts PLOs (Q6&7 cover sheet) |
| --- | --- | --- | --- | --- |
| 9 Dec 2021 | Minor | Sept 2022 | 5, 12 | No |
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| Revised FSO Jan 2018 |