1. **Title of the module**

Core Inorganic and Physical Chemistry for Forensic Science (FSCI3030/FS303)

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

School of Physical 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 2

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

None

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

BSc(Hons) Forensic Science

BSc(Hons) Forensic Science with a Year in Industry

BSc(Hons) Forensic Science with a Year Abroad

BSc(Hons) Forensic Science with a Foundation Year

MSci Forensic Science

1. **The intended subject specific learning outcomes.**

**On successfully completing the level module students will be able to:**

1. Demonstrate knowledge of core and foundation scientific chemical and physical concepts, terminology, theory, units, conventions and methods in relation to the chemical and forensic sciences.
2. Understand areas of chemistry including properties of chemical elements, states of matter, physiochemical principles, thermodynamics and inorganic chemistry.
3. Demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to inorganic and physical chemistry and to apply such knowledge and understanding to the solution of qualitative and quantitative problems.
4. Demonstrate and ability to recognise and analyse problems and plan strategies for their solution by the evaluation, interpretation and synthesis of scientific information and data.
5. Demonstrate the ability to collate, interpret and explain the significance and underlying theory of experimental data, including an assessment of limits of accuracy.
6. **The intended generic learning outcomes.**

On successfully completing the module students will be able to:

1. Demonstrate a range of appropriate communication skills.
2. Demonstrate generic skills needed for students to undertake further training of a professional nature.
3. Demonstrate problem-solving skills, relating to qualitative and quantitative information, extending to situations where evaluations have to be made on the basis of limited information.
4. Demonstrate numeracy and computational skills, including such aspects as error analysis, order-of-magnitude estimations, correct use of units, and modes of data presentation.
5. Demonstrate information-retrieval skills, in relation to primary and secondary information sources, including information retrieval through on-line computer searches.
6. Demonstrate information-technology skills such as word-processing and spreadsheet use, data-logging and storage, Internet communication, etc.
7. Demonstrate time-management and organisational skills, as evidenced by the ability to plan and implement efficient and effective modes of working. Self-management and organisational skills with the capacity to support life-long learning.
8. Demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to the subject and to apply such knowledge and understanding to the solution of qualitative and quantitative problems.
9. Demonstrate an ability to recognise and analyse problems and plan strategies for their solution by the evaluation, interpretation and synthesis of scientific information and data.
10. **A synopsis of the curriculum**

This module will provide forensic science students with some of the core understanding in inorganic and physical chemistry. These aspects will underpin students’ understanding of Analytical Techniques and the Chemistry related to various forensic processes, leading to an enhanced understanding of Forensic Chemistry.

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

* Weller, Overton, Rourke, and Armstrong, Inorganic Chemistry 7th Edition, 2018, Oxford University Press
* Clayden, Greeves, and Warren, Organic Chemistry 2nd Edition, 2012, Oxford University Press
* Atkins, de Paula, and Keeler, Physical Chemistry 11th Edition, 2017, Oxford University Press
* Keeler and Wothers, Structure and Reactivity: An Integrated Approach 2nd Edition, 2013, Oxford University Press

1. **Learning and teaching methods**

Total contact hours: 30

Total private study hours:120

Total module study hours: 150

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

|  |  |
| --- | --- |
| Online Quiz (1 hour) | 5% |
| Assessed Workshop 1 (4 hours) | 15% |
| Online Quiz 2 (1 hour) | 5% |
| Assessed Workshop 2 (4 hours) | 15% |
| Examination (2 hours) | 60% |

13.2 Reassessment methods

100% by Examination

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | 8.1 | 8.2 | 8.3 | 8.4 | 8.5 | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 | 9.6 | 9.7 | 9.8 | 9.9 |
| **Learning/teaching method** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Private Study** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| Workshop | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** |
| Lectures | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Online Quizzes | **X** | **X** | **X** | **X** |  |  | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| Assessed Workshops | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| Examination | **X** | **X** | **X** | **X** | **X** | **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**

Chemistry is an inherently international subject, with teaching and research active across the globe, and this is facilitated by well-defined conventions in terminology and mathematical modelling which allow complex concepts to be communicated across language barriers. In recent years, Nobel prizes and prestigious awards have been awarded to international collaborators and rivals. This module introduces students to the work of these pioneers, as well as the fundamentals behind it, and so enables them to interact with this community. Where possible, the reading list has been chosen, in part, to demonstrate the diversity of backgrounds of chemists working in the field.

**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 delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
|  |  |  |  |  |