1. **Title of the module**

CHEM3080 (CH308) - Molecules, Matter and Energy

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 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)**

Autumn and Spring

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

None

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

BSc/BSc with Year in Industry/MSci Forensic Science

BSc/BSc with Year in Industry/MSci Chemistry

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

Have a knowledge and understanding of:

* 1. Major aspects of chemical terminology, conventions and units
	2. The nature of electrons and the structures of atoms and molecules
	3. The characteristics of the states of matter and the theories used to describe them

8.4 The principles of thermodynamics

1. **The intended generic learning outcomes.
On successfully completing the module students will be able to:**
	1. Demonstrate knowledge and understanding of essential facts, concepts, principles and theories

9.2 Solve qualitative and quantitative problems

1. **A synopsis of the curriculum**

This module introduces and revises the basic concepts of chemistry that underpin our understanding of the stability of matter. This starts with introducing atomic and molecular structure, with a focus on understanding the electronics of bonding in the molecular compounds around us. You will then study the laws governing the behaviour of gases and origins of other interactions that hold solids and liquids together, alongside describing some of their basic properties such as conductivity, viscosity, and the way in which ions behave in solution. In the final aspect of this module, we cover the critical role thermodynamics plays in determining the stability of matter, including the fundamental laws of thermodynamics and the importance of equilibrium in reversible reactions.

1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**
* Winter (1994), Chemical Bonding: Recommended for the Atomic and Molecular Structure component of this module
* Jones, Clemmet, Higton and Golding (1999), Access to Chemistry: Background reading for students without A-level chemistry
* Chang (2000), Physical Chemistry for the Chemical and Biological Sciences: Recommended purchase for students with a good A-level chemistry background
* Atkins (2012), The Elements of Physical Chemistry: A Less Mathematical Approach
1. **Learning and teaching methods**

Total contact hours: 22

Private study hours: 128

Total study hours: 150

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

Assignment 1 (30 minutes, 6.5%)

Assignment 2 (30 minutes, 6.5%)

Class Assessment 1 (45 minutes, 7%)

Assignment 3 (30 minutes, 6.5%)

Class Assessment 2 (45 minutes, 7%)

Assignment 4 (5 hours, 6.5%)

Examination (2 hours, 60%)

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* | *9.1* | *9.2* |
| **Learning/ teaching method** |  |  |  |  |  |  |
| **Private Study** | **X** | **X** | **X** | **X** | **X** | **X** |
| *Lectures* | **X** | **X** | **X** | **X** | **X** | **X** |
| **Assessment method** |  |  |  |  |  |  |
| *Assignment 1* | **X** | **X** |  |  | **X** | **X** |
| *Assignment 2* | **X** | **X** |  |  | **X** | **X** |
| *Class Assessment 1* | **X** | **X** |  |  | **X** | **X** |
| *Assignment 3* |  |  | **X** |  | **X** | **X** |
| *Class Assessment 2* |  |  | **X** | **X** | **X** | **X** |
| *Assignment 4* |  |  |  | **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**

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. This module focuses on fundamentals of the science, from structure to behaviour, and so equips students to enter into this broader community. The books for the reading list have been chosen to accommodate the wide range of student backgrounds and so open the course to all suitable backgrounds.

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**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) |
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Revised FSO Jan 2018