

## MODULE SPECIFICATION FORM

Module Title: <b>Inorganic and Materials Chemistry</b>	Level: 4	Credit Value: 20
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Module code: SCI423	Cost Centre: GAFS	JACS3 code: F100
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Trimester(s) in which to be offered: 2	With effect from: September 2016
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<b>Office use only:</b> To be completed by AQSU:	Date approved: July 2014
	Date revised: - July 2016 (updated to include BSc Chemistry with Education)
	Version no: 2

Existing/New: Existing	Title of module being replaced (if any):
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Originating School: Applied Science, Computing & Engineering	Module Leader: Dr Clive Buckley
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Module duration (total hours): 200 Scheduled learning & teaching hours: 50 Independent study hours: 150	Status: core/option/elective (identify programme where appropriate): Core
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Programme(s) in which to be offered: BSc (Hons) Chemistry with Green Nanotechnology. BSc (Hons) Chemistry with Education	Pre-requisites per programme (between levels): None
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<b>Module Aims:</b>
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This module aims to provide students with an appropriate grounding in inorganic and materials chemistry. The module will explore fundamental aspects of inorganic chemistry to include an introduction to quantum mechanics, molecular geometry and bonding. The module will also explore the chemistry of the d-block elements, an introduction to solid state chemistry, metallurgy and modern materials.

### Intended Learning Outcomes:

At the end of this module, students will be able to ...

1. Summarise key concepts of quantum mechanics (KS1)
2. Articulate concepts of molecular geometry and bonding (KS1)
3. Describe and explain the chemistry of the d-block elements (KS5)
4. Apply models of bonding to explain properties of solids (KS1, KS4)
5. Investigate and interpret the properties of a range of modern materials (KS6)

### Key skills for employability

1. Written, oral and media communication skills
2. Leadership, team working and networking skills
3. Opportunity, creativity and problem solving skills
4. Information technology skills and digital literacy
5. Information management skills
6. Research skills
7. Intercultural and sustainability skills
8. Career management skills
9. Learning to learn (managing personal and professional development, self-management)
10. Numeracy

### Assessment:

Assessment 1; (50%) Examination (2hrs)

Assessment 2: (50%) A poster presentation describing the production and properties of a 'modern' material

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting	Duration (if exam)	Word count (or equivalent if appropriate)
1	1, 2 and 3	Examination	50%	2 hours	
2	4 and 5	Poster Presentation	50%		1,500

**Learning and Teaching Strategies:**

Lectures and tutorials will be supported by online provision.  
Students will be expected to maintain a blog.

**Syllabus outline:**

- Quantum mechanics and atomic orbitals
- Molecular geometry and bonding
- Transition metal chemistry
- Introduction to the solid state
- Metals and metallurgy
- Modern materials.(e.g. semiconductors, superconductors and ceramics)

**Bibliography:**Essential reading:

Ebbing, D.D. and Gammon, S.D. (2012) *General Chemistry, 10<sup>th</sup> Edition*, Brooks Cole  
Module resources on VLE to include multi-media.

Other indicative reading:

Brown, L. B., LeMay Jr, H. E., Bursten, B. E. and Murphy, C. J. (2011) *Chemistry The Central Science*, Pearson