

Module Code:	SCI437
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Module Title:	Inorganic and Materials Chemistry
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Level:	4	Credit Value:	20
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Cost Centre(s):	GAFS	JACS3 code:	F100
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School:	Applied Science, Computing & Engineering	Module Leader:	Dr Ian Ratcliffe
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Scheduled learning and teaching hours	36 hrs
Guided independent study	164 hrs
Placement	0 hrs
<b>Module duration (total hours)</b>	<b>200 hrs</b>

Programme(s) in which to be offered (not including exit awards)	Core	Option
BSc (Hons) Chemistry	✓	<input type="checkbox"/>

<b>Pre-requisites</b>
None

**Office use only**

Initial approval: Mar 18 - validation of BSc Chemistry

Version no: 1

With effect from: Sept 18

Date and details of revision:

Version no:

## Module Aims

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

### Key skills for employability

KS1	Written, oral and media communication skills
KS2	Leadership, team working and networking skills
KS3	Opportunity, creativity and problem solving skills
KS4	Information technology skills and digital literacy
KS5	Information management skills
KS6	Research skills
KS7	Intercultural and sustainability skills
KS8	Career management skills
KS9	Learning to learn (managing personal and professional development, self-management)
KS10	Numeracy

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

Key Skills

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

### Transferable skills and other attributes

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**Derogations**

N/A

**Assessment:**

Indicative Assessment Tasks:

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	1,2,3	Examination	50	2 hours	
2	4,5	Poster Presentation	50		1500

**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)

<b>Indicative Bibliography:</b>
<b>Essential reading</b>
Ebbing, D.D. and Gammon, S.D. (2015), <i>General Chemistry</i> . 11th ed. Australia: Brooks Cole/Cengage Learning.  Module resources on VLE to include multi-media.
<b>Other indicative reading</b>
Brown, T. B., LeMay, H.E., Bursten, B.E., Murphy, C.J., Woodward, P.M. and Stoltzfus, M.W., (2017), <i>Chemistry: The Central Science</i> . 14th ed. Harlow: Pearson.