

## Module Specification

Module Title  Module Code

Credit Value  Level  Mode of Delivery  Semester A

Pre-requisite modules	Co-requisite modules	Overlapping modules
CHE203		

### 1) Content Description

Provide a description of the module, as it will appear in the Module Directory and on the Student Information

System (approx. 70-80 words).

This module will cover advanced topics in inorganic chemistry from the more traditional aspects to the latest trends. This will include the role that metals play in biological systems and in medical applications; also the more recent role of nanoparticles will be discussed, with a focus on inorganic nanomaterials, from synthesis to applications, including a comparison between "nano" and "bulk" properties. Electron transport in naturally occurring systems will be covered such as in the electron transfer chain of aerobic respiration, nitrogenase enzymes and the role of iron-porphyrin complexes in biological electron transfer.

### 2) Module Aims

Specify the aims of the module, i.e. the broad educational purposes for offering this module.

The module is designed to give students an understanding of advanced concepts in inorganic chemistry including examples of relevance to the pharmaceutical industry and an introduction to nanochemistry. The aim is to furnish the student with sufficient knowledge and experience with the new progresses of research in the inorganic field.

### 3) Learning Outcomes

Identify the learning outcomes for this module, i.e. knowledge, skills and attributes to be developed through completion of this module. Outcomes should be referenced to the relevant [QAA benchmark statements](#) and the [Framework for Higher Education Qualifications in England, Wales and Northern Ireland \(2008\)](#). The [SEEC Credit Level Descriptors for Further and Higher Education 2003](#) and [Queen Mary Statement of Graduate Attributes](#) should also be used as a guiding framework for curriculum design.

Academic Content:

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| A1 | This module will enhance students' understanding of the role that inorganic chemistry plays in a diverse number of processes and applications. |
| A2 | The module will also develop their understanding of many aspects of theory that underlie these roles.  |

Disciplinary skills - able to:

B 1	The module will enhance students' ability for logical thinking, deduction and interpretation of results presented in current research topics.
B 2	They will be able to follow modern trends in inorganic chemical research through becoming familiar with material published in recent primary literature.

Attributes:	
C 1	

C 2	
C 3	
C 4	
C 5	

#### 4) Reading List

Provide an indicative reading list for the module. This should include key texts and/or journals but **should not** be an exhaustive list of materials.

The module is not tied to a single textbook. Students must have access to Inorganic and Physical Chemistry textbooks.

Unlimited access to ebooks for the nanochemistry part is available from QMUL library.

Useful literature: I. Bertini, H.B. Gray, E.I. Stiefel, J.S. Valentine, (eds) Biological Inorganic Chemistry, University Science Books, Mill Valley, California, 2007 C.E. Housecroft and A.G. Sharpe, "Inorganic Chemistry," 4rd Edition, Pearson, Prentice Hall, 2012 Chapter 29 D.F. Weller, Overton, Rourke and Armstrong, "Inorganic Chemistry," 6th Edition, OUP. Chapters 26 &27

W. Kaim and B. Schwederski, A. Klein Bioinorganic Chemistry - Inorganic Elements in the Chemistry of Life An Introduction and Guide, 2nd ed. 2013 John Wiley & Sons. J.J.R. Frausto da Silva and R.J.P. Williams, The Biological Chemistry of the Elements. The Inorganic Chemistry of Life, Clarendon Press, 1991, Oxford, UK. (QP531 SIL). P. Atkins, J. de Paula, "Atkins's Physical Chemistry" 9th Edition, Oxford Press, 2010 I. Bertini, H.B. Gray, S.J. Lippard, J.S. Valentine, (eds) Bioinorganic Chemistry, University Science Books, Mill Valley, California, 1994 In addition regular reference will be made to the primary literature.

#### Teaching and Learning Profile

Provide details of the method of delivery (lectures, seminars, fieldwork, practical classes, etc.) used to enable the achievement of learning outcomes and an indicative number of hours for each activity to give an overall picture of the workload a student taking the module would be expected to undertake. This information will form the Key Information Set for each undergraduate programme and will be used to populate the KIS widget found on the QMUL programme information pages. More information can be found [online](#) about KIS. You may also wish to refer to the [QAA guidance on contact hours](#) when completing this section.

Activity Type	KIS Category	Time Spent (in hours)
Practical Classes and workshops	Scheduled	8
Lecture	Scheduled	22

Fieldwork	Scheduled	0
Total		
Specify the total module notional study hours. This should be a total of the hours given for each activity. The notional study hours for each academic credit point is 10. A 15 credit point module therefore represents 150 notional study hours.		
Activity Type	Total Time Spent (in hours)	Percentage of Time Spent
Scheduled learning and teaching	30	20
Placement	0	0
Independent Study	120	80
Total	150	100
Use the information provided in the box above to specify the total time spent and the percentage time spent in each category of teaching and learning activity.		

### Assessment Profile

Provide details of the assessment methods used to assess the achievement of learning outcomes.

Description of Assessment	Assessment Type	KIS Category	Duration / Length	Percentage Weighting	Final element of assessment?	Qualifying Mark
Coursework	Written assignment, including Essay	Coursework		10	No	
Examination	Written Exam	Written	2.5 hours	90	Yes	

**Qualifying mark:** A specified minimum mark that must be obtained in one or more elements of assessment in order to pass a module. **This is in addition to, and distinct from, the requirement to achieve a pass in the module mark to pass the module.**

### Reassessment

Provide details of the reassessment methods used, specifying whether reassessment is either standard reassessment or synoptic reassessment.

- Standard Reassessment
  Synoptic Reassessment

Synoptic reassessment details (if you have indicated synoptic reassessment above, please give details)		
Brief Description of Assessment	Assessment Type	Duration / Length of Examination / Coursework

Resit Exam	Written Exam	3 hours
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