

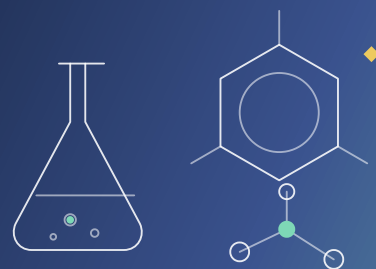
Module code

SPC-3407

Type of module

Undergraduate: Chemistry – Elective

Metals in Biological Systems



Modular credits

2

Total student
engagement

28 hours

Prerequisite

SPC-1202
(Fundamental
Concepts in
Chemistry)

Anti-requisite

None

Aims

To provide students with an understanding of the roles, chemistry, and applications of metals in biological systems and medicine.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Analyse biologically essential and toxic metals and their functions in living systems.

MLO 2

Evaluate coordination chemistry principles as applied to bioinorganic systems.

MLO 3

Analyse the chemical mechanisms of metal detoxification and transport in biology.

MLO 4

Apply knowledge of bioinorganic chemistry to understand medical applications of metals.

Module contents

Basic cell structure relevant to metal functions

Biologically essential and toxic metals

Biological functions of main group and transition metal elements

Principles of coordination chemistry in bioinorganic chemistry

Physical methods used in bioinorganic studies

Chemical mechanisms for removing metal toxicities (natural and human intervention)

Metalloproteins: oxygen transport, storage, and electron transport proteins

Channels and pumps for metal transport in biological systems

Metals in medicine: drugs (cisplatin, anti-arthritis), MRI contrast agents

Assessment

60% **40%**

Examination

Coursework



■ Examination — 60% ■ Class tests — 20% ■ Assignments — 10% ■ Oral/poster presentations — 10%

Formative assessment

Weekly discussion
and feedback

Summative assessment

COMPONENT	WEIGHTING
Examination	60%
Coursework	40%
Individual	40%
Class tests	20%
Assignments	10%
Oral/poster presentations	10%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

1	PLO 1 (Fundamental Knowledge in Chemistry)	3	PLO 3 (Critical Thinking and Problem-Solving Skills)
4	PLO 4 (Communication and Collaborative Skills)	6	PLO 6 (Digital Literacy and Lifelong Learning Skills)

Sustainability concept addressed

4	SDG 4 Quality Education
15	SDG 15 Life on Land

Digital skills/software used (not limited to)

■	Word processing software (e.g. Microsoft Word)
■	Presentation (e.g. Microsoft PowerPoint)
■	Quizzes (Canvas)

Micro-credentialling option

No

Stackable towards GenBESTARI Undergraduate Degree Programme or other relevant Lifelong Learning Programmes

No

Document details

Office **ODVCE** Document date **27 June 2026** Status **New** Approval **GBF (12/02/2026)**