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The published on-line version of the Course Profile is the authoritative version and by the publication of the Course Profile on-line the University deems the student has been notified of and read the course requirements.

1. General Course Information

1.1 Course Details

COURSE CODE	2101NSC
COURSE TITLE	Inorganic Chemistry
ACADEMIC ORGANISATION	ESC School of Environment and Science
TRIMESTER	Trimester 1 2021
MODE	Blended
LEVEL	Undergraduate
LOCATION	Nathan, On Campus
CREDIT POINT VALUE	10

Course Description:

The course deals with fundamental aspects of the role of inorganic chemistry and, in particular, metal ions and compounds in medicinal chemistry and includes an overview of the basic principles of inorganic chemistry and medicinal chemistry. The emphasis is on the role of transition metals in biological systems and the application of physical techniques to probe the structure and function of the metal environment. Incompatible: 2101BPS Inorganic Chemistry, 2208ENV Inorganic Chemistry Pre-requisite: 1022SCG Chemistry 1B or 1024SCG Chemistry II

Assumed Background:

Pre-requisite: Chemistry 1B 1022SCG or 1024SCG Chemistry II

1.2 Course Introduction

The course deals with fundamental aspects of the role of inorganic chemistry and, in particular metal ions and compounds in medicinal chemistry and biological processes and includes an overview of the basic principles of inorganic chemistry and medicinal chemistry.

Previous Student Feedback

In the past, students have found this course to be a well-organised and interesting course, Student evaluation of course (SEC) results from past years indicate a high to very high level of satisfaction with the course overall:

2017 - 4.3/5.0

2018 - 4.5/5.0

2019 - 4.1/5.0

2020 - 4.5/5.0

1.3 Course Staff

Primary Convenor **Dr Porun Liu**

EMAIL	p.liu@griffith.edu.au
CAMPUS	Gold Coast Campus
BUILDING	Science 1 (G24)
ROOM	4.14
CONSULTATION	<p>Appointments for teaching team members may be made by arrangement, where Email is the best form of contact. Email is read regularly by the course convenor, and is the preferred means of contact to arrange meetings or for short questions. Electronic bulletin boards etc. will not be used in this course.</p> <p>Email will be used to circulate announcements and should be checked daily by the students.</p> <p>Announcements will also be posted on the Announcement page of the Learning@Griffith site. Details on lecture content, teaching team members, etc. will also be provided on the Learning@Griffith site. This site will be updated throughout the trimester and should be checked regularly.</p>

1.4 Timetable

Timetables are available on [the Programs and Courses website](#).

NB: Details contained in this Section of the course profile and Section 4.1 Learning Activities are to be read in conjunction with the official class timetable. The published class timetable which is the authoritative source for timetabling information for all campuses can be located by clicking on the above link.

Additional Timetable Information

The laboratory for Inorganic Chemistry commences in Week 2. Please ensure that you check the day, time and experiment that you will be completing. A timetable (which will become during O week on Learning @Griffith) contains the actual days and time that you are scheduled to attend lab class for Experiment 1 and Experiment 2.

Summary of Student contact:

- Total number of lectures: 24 hours during weeks 1-12
- Total number of Tutorials and Revision sessions: 8 hours during weeks 1-12
- Total number of Labs: 8 hours as 2 x 4 hours in weeks 2 - 5

1.5 Lecture Capture

It is standard practice at Griffith University that lectures timetabled in lecture capture-enabled venues are recorded and made available to students on the relevant course site, in accordance with the University's [Lecture Capture Policy](#).

The lecture series delivered as part of this course will be recorded and accessible via the Learning@Griffith course site.

1.6 Technical Specifications

Microsoft Office 2003 or later

Adobe Acrobat Reader (available as a free download)

A broadband, cable or satellite internet connection; preferably a fast connection

2. Aims, Outcomes & Graduate Attributes

2.1 Course Aims

The objectives of this course are to develop basic knowledge and skills in inorganic chemistry and to apply this knowledge and these skills to understanding the role and functions of inorganic compounds in medicinal and bioinorganic chemistry.

The course deals with fundamental aspects of the role of inorganic chemistry and, in particular metal ions and compounds in medicinal chemistry and biological processes and includes an overview of the basic principles of inorganic chemistry and medicinal chemistry.

2.2 Learning Outcomes

After successfully completing this course you should be able to:

- 1 Understand basic theoretical principles and use fundamental experimental methods of medicinal and bioinorganic chemistry.
- 2 Apply the knowledge and skills gained to practical situations in medicinal and bioinorganic chemistry by carrying out experiments and evaluating experimental data.
- 3 Acquire laboratory skills and carry out laboratory experiments (for students physically attend the laboratory).
- 4 Gain problem-solving skills by participation in tutorials and working through set problems.

2.3. Graduate Attributes

For further details on the Griffith Graduate please [click here](#)

Griffith University prepares influential graduates to be:

- [Knowledgeable and skilled, with critical judgement](#)
- [Effective communicators and collaborators](#)
- [Innovative, creative and entrepreneurial](#)
- [Socially responsible and engaged in their communities](#)
- [Culturally capable when working with First Australians](#)
- [Effective in culturally diverse and international environments](#)

This table demonstrates where each of the Griffith Graduate Attributes is taught, practised and assessed in this course.

For further details on the Griffith Graduate Attributes please refer to [The Griffith Graduate policy](#).

University wide attributes

GRADUATE ATTRIBUTE	TAUGHT	PRACTISED	ASSESSED
Knowledgeable and skilled, with critical judgement	•	•	•
Effective communicators and collaborators	•	•	•
Innovative, creative and entrepreneurial	•	•	•
Socially responsible and engaged in their communities	•	•	•
Effective in culturally diverse and international environments		•	

Additional Course Information on Graduate Attributes

3. Learning Resources

3.1 Required Resources

Details of your Required Learning Resources are available from the [Reading List](#).

3.2 Recommended Resources

Details of your Recommended Learning Resources are available from the [Reading List](#).

3.3 University Learning Resources

The University provides many facilities and support services to assist students in their studies. Links to information about University support resources that are available to students are included below for easy reference.

[Readings](#) - New online service enabling students to access Required and Recommended Learning resources. It connects to the library catalogue to assist with quickly locating material held in Griffith libraries and enables students to manage and prioritise their readings, add personal study notes and export citations.

[Learning@Griffith](#) - there is a dedicated website for this course via the Learning@Griffith at myGriffith.

[Academic Integrity Tutorial](#) - this tutorial helps students to understand what academic integrity is and why it matters. You will be able to identify types of academic misconduct, understand what skills you will need in order to maintain academic integrity, and learn about the processes of referencing styles.

[Student Support](#) - provides a range of services to support students throughout their studies including personal support such as Counselling and Health Services; Academic support; and Financial and Welfare support.

The [Careers and Employment Team](#) provides: Career Wellbeing, Career Planning and Decision Making, Finding Jobs, Skills Identification and Development, Graduate Employment Information, LinkedIn Profile Review, Interview Preparation, Online Psychometric and Aptitude Test Preparation, International Student Support, Disability Disclosure Strategies and Higher Degree Research (HDR) Career Consultations.

[Library and Learning Services](#): Library and Learning Services provides a wide range of quality client-focused services and programs to students, researchers and staff of the University. Library and Learning Services works in collaboration with the academic community to achieve academic and research outcomes.

[Support for learning](#) - the University provides access to common use computing facilities for educational purposes.

[Code of Practice](#) - Griffith Information Technology Resources.

3.5 Other Learning Resources & Information

Learning Resources for this course will be provided through Learning@Griffith

2101NSC Lecture Slides and Materials available on Learning@Griffith.

2101NSC Tutorial Problem Sheets available on Learning@Griffith.

2101NSC Laboratory Manual available on Learning@Griffith.

4. Teaching & Learning Activities

4.1 Learning Activities

Week Commencing	Activity	Learning Outcomes
8 Mar 21 - 16 Apr 21	Inorganic Chemistry (Lecture Series): Lectures and Tutorial Problem Classes will cover the various aspects of Inorganic Chemistry and be the foundation for the bioinorganic and medicinal inorganic chemistry section.	1, 2, 4
15 Mar 21 - 13 Apr 21	Laboratory (Laboratory): Students who attend to the campus will complete TWO experiments in laboratory Classes from weeks 2 to 5: Qualitative inorganic analysis (4 hours experimental laboratory; assessed by Laboratory report); Electronic of Chlorophyll from Leaves: replacement of bound Magnesium by Copper (4 hours experimental laboratory; assessed by Laboratory report)	1, 2, 3
19 Apr 21 - 4 Jun 21	Bioinorganic and Medicinal Inorganic Chemistry (Lecture Series): Lectures and Tutorial Problem Classes will cover the various aspects of Bioinorganic and Medicinal Inorganic Chemistry	1, 2, 4

4.2 Other Teaching and Learning Activities Information

A combination of lectures (24), tutorial/problem classes (~10-12, approximately 1 hour per week) and a laboratory component (2 x 4 hours, weeks 2-5)

The lectures provide an organized overview of the chemistry of inorganic compounds and the role played by metals in biological processes. The problem tutorials, assessable problem sheets and assignment provide students with learning mechanisms to build on the knowledge gained from lectures and associated readings. The laboratory classes provide both an introduction to practical experience in the field of medicinal and bioinorganic chemistry and also aids in construction of knowledge and understanding of the area.

This course will cover major topics such as:

- Introduction to Inorganic, Medicinal inorganic chemistry and Bioinorganic chemistry
- Review of the fundamental principles of inorganic chemistry; periodic properties of the elements; acid and base (including bonding, stability and reactivity of transition metal compounds), VSEPR and Ionic Bonding, d-metal complexes, electronic structure and Crystal Field Theory, and redox properties of inorganic compounds in aqueous solution.
- Overview of the role of metal ions in biology.
- Case studies in medicinal inorganic chemistry selected from the following topics including: Biomedical uses of Lithium; The medicinal chemistry of Bismuth; Application of Platinum compounds in medicine; Gold(I) compounds with anti-arthritis and anti-tumour properties; Ruthenium compounds in medicine; Chelation therapy; Inorganic diagnostic reagents in MRI and radiopharmaceuticals; Organic drugs targets at metals.
- The essential elements. Disease states characterised by deficiency and excess. General principles underlying selective binding of metal ions in biological systems. Transport and storage of metal ions: transferrin and ferritin (Fe).
- The alkali and alkaline earth metals: Na and K in osmotic control; Mg enzymes in the cytosol; Ca trigger proteins: calmodulin and related proteins.
- Bioinorganic chemistry of Zinc: Catalytic and structural zinc sites in proteins: carbonic anhydrase, carboxypeptidase, zinc finger proteins.
- Bioinorganic chemistry of copper: electron transfer proteins, dioxygen transport and metabolism: plastocyanin, haemocyanin, ascorbate oxidase
- Bioinorganic chemistry of iron: Haem-Fe proteins: myoglobin, haemoglobin and cytochromes. Nonhaem- Fe proteins, Fe-S proteins, haemerythrin, Mitochondrial electron transport chain, cytochrome oxidase
- Laboratory: Students will complete 2 experiments:
 - Qualitative inorganic analysis (4 hours);
 - Extraction of Chlorophyll from Leaves: Replacement of bound Magnesium by Copper (4 Hours);

The purpose of this course is to motivate students to understand the fundamental concepts and methods of inorganic chemistry and apply these concepts and methods to an understanding of the role of inorganic compounds in medicinal and bioinorganic chemistry.

If any student has a disability and/or health condition that may impact on their ability to successfully undertake required learning activities in this course, they are encouraged to complete the [Griffith University Disclosure Statement](#) and advise their Course Convenor.

If a lecture or tutorial class is scheduled on a public holiday (or is cancelled for any unexpected reason), this class will normally not be repeated.

5. Assessment Plan

5.1 Assessment Summary

This is a summary of the assessment in the course. For detailed information on each assessment, see [5.2 Assessment Detail](#) below.

ASSESSMENT TASK	DUE DATE	WEIGHTING	MARKED OUT OF	LEARNING OUTCOMES	MAXIMUM EXTENSION PERIOD
<i>Assignment - Laboratory/ Laboratory Report</i> Laboratory Component	15 Mar 21 - 23 Apr 21 Laboratory Reports due one week following the completion of each individual Experiment	20%	20 marks	1, 2, 3	
<i>Assignment - Written Assignment</i> Assignment Questions based on Tutorial Work	23 Apr 21 17:00	10%	10 marks	1, 4	
<i>Exam - selected and constructed responses</i> Mid Trimester Exam	29 Apr 21 15:00 90 minutes exam working time	20%	20 marks	1, 2, 4	
<i>Assignment - Written Assignment</i> Long Answer Questions Based on Tutorial Work	31 May 21 09:00 Monday at 9 am in week 12	10%	10 marks	4	
<i>Exam - selected and constructed responses</i> End of Trimester Exam	Examination Period	40%	40 marks	1, 2, 4	

5.2 Assessment Detail

Title: Laboratory Component

Type: Assignment - Laboratory/Laboratory Report

Learning Outcomes Assessed: 1, 2, 3

Due Date:

15 Mar 21 - 23 Apr 21 Laboratory Reports due one week following the completion of each individual Experiment

Weight: 20%

Marked out of: 20

Task Description:

Minimum Requirements to Pass the Course To pass this course students must achieve:

- An overall mark of at least 50% for the whole course.
 - Satisfactory performance in the laboratory component (completion of the laboratory practical and submission of the written report) is required to obtain a grade of pass or higher.
- You are required to attend two(2) laboratory sessions and complete experiment 1 and experiment 2. Laboratory reports are to be prepared on each of the experiments carried out during lab class. Full requirements to be provided in the laboratory manual which is available on learning@griffith.

Each Laboratory Report must be submitted according to the information given in the laboratory manual one week following the completion of each individual Experiment.

Criteria & Marking:

The laboratory classes are designed to help students' to develop practical skills in the acquisition, handling, interpretation and presentation of data and to obtain practice in use of scientific methods of enquiry. Satisfactory attendance and performance is required for successful completion of this course. Assessment is via a practical report.

Each Laboratory Report must be submitted according to the information given in the laboratory manual one week following the completion of each individual Experiment. Marked reports and feedback will be distributed in lecture classes or via learning@griffith or email to each student no later than 10 working days after submission.

Submission: Via the 'Assignments' tool in Learning@Griffith.

This assessment item:

- is a school based activity
- is an individual activity
- does not include a self assessment activity
- does not have a re-attempt provision

Title: Assignment Questions based on Tutorial Work

Type: Assignment - Written Assignment

Learning Outcomes Assessed: 1, 4

Due Date:

23 Apr 21 17:00

Weight: 10%

Marked out of: 10

Task Description:

Short answer assessable assignment questions based on tutorial work from week 1 to 5.

Criteria & Marking:

The assignment will provide students with mechanisms to build on the knowledge gained in lectures and associated readings.

Submission: Answers to each of the assignment questions must be submitted by the due date according to the instructions given on each of the assignment sheet. The assignment sheet can be downloaded from learning@griffith. Marked assignment and feedback will be distributed in lecture classes or via learning@griffith or email to each student no later than 10 working days after submission.

Submission: Via the 'Assignments' tool in Learning@Griffith.

This assessment item:

- is a school based activity
 - is an individual activity
 - does not include a self assessment activity
 - does not have a resubmission provision
-

Title: Mid Trimester Exam**Type:** Exam - selected and constructed responses**Learning Outcomes Assessed:** 1, 2, 4**Due Date:**

29 Apr 21 15:00 90 minutes exam working time

Weight: 20%**Marked out of:** 20**Duration:** 90 minutes**Format:** Open Book, Online**Task Description:**

The Mid Trimester Examination questions will be provided and completed during normal lecture times as given above. This examination will cover course materials from weeks 1-6 (Lectures 1-12, Tutorials in weeks 3-6, Assignment 1)

Length: 1.5 hours

Criteria & Marking:

The examination tests the students individual abilities to recall information, understand chemical concepts and apply this knowledge and understanding to medicinal inorganic chemistry.

The open book examination will be run online. Feedback on exam will be provided to students in class and summaries with model answers will be provided on the learning@Griffith site no later than 10 working days after exam.

Submission: Via the 'Assignments' tool in Learning@Griffith.

This assessment item:

- is a school based activity
 - is an individual activity
 - does not include a self assessment activity
 - does not have a re-attempt provision
-

Title: Long Answer Questions Based on Tutorial Work**Type:** Assignment - Written Assignment**Learning Outcomes Assessed:** 4**Due Date:**

31 May 21 09:00 Monday at 9 am in week 12

Weight: 10%**Marked out of:** 10**Task Description:**

Students must submit answers to two long answer questions (approximately 500 words each) from a choice of questions.

Questions will be provided from week 8.

Criteria & Marking:

The assignment will provide students with mechanisms to build on the knowledge gained in lectures and associated readings.

Answers to the assignment questions must be provided by the due date according to the instructions on the assignment sheet.

The assignment sheet can be downloaded from learning@griffith. Marked assignments and feedback will be distributed in lecture classes or via learning@griffith or email to each student no later than 10 working days after submission.

Submission: Via the 'Assignments' tool in Learning@Griffith.

This assessment item:

- is a school based activity
 - is an individual activity
 - does not include a self assessment activity
 - does not have a resubmission provision
-

Title: End of Trimester Exam**Type:** Exam - selected and constructed responses**Learning Outcomes Assessed:** 1, 2, 4**Due Date:**

Examination Period

Weight: 40%**Marked out of:** 40**Perusal:** 10 minutes**Duration:** 120 minutes**Format:** Open Book, Online**Task Description:**

The Final Examination will examine the Course Material in 2101NSC Inorganic Chemistry for weeks 1-12 of Trimester 1, 2021

To achieve a Pass grade for the course a Pass mark for the supplementary assessment item must be achieved.

Criteria & Marking:

Examinations will test students understanding of the relevant course materials and problem solving skills.

The open book examination will be run online. Feedback on exam will be provided to students upon request from convenor/instructors via email or online discussion no later than 10 working days after exam.

This assessment item:

- is a centrally organised activity
-

- is an individual activity
- does not include a self assessment activity

5.3 Late Submission

For all non-Honours Dissertation courses: An assessment item submitted after the due date, without an approved extension, will be penalised. The standard penalty is the reduction of the mark allocated to the assessment item by 5% of the total weighted mark for the assessment item, for each working day that the item is late. A working day will be defined as Monday to Friday. Assessment items submitted more than five working days after the due date will be awarded zero marks. To understand how the mark is reduced please refer to [Assessment Procedures for Students](#).

For all Honours Dissertation courses: Enrolment in an Honours degree shall be cancelled and the candidature terminated if the candidate fails to lodge their Honours dissertation by the prescribed date including any approved extensions.

5.4 Other Assessment Information

Supplementary Assessment is available in this course in accordance with Section 8 of the University Assessment Policy. To achieve a Pass grade for the course a pass mark for the supplementary assessment item must be achieved.

Final Grades

A student's final grade for this course will be based on the aggregation and weighting of marks across assessment, any mandatory pass components and grade cut-offs. Grade cut-offs can vary, so you will need to wait for the official release of grades to be sure of your grade for this course.

- This course is a graded course (i.e 7, 6, 5, 4, 3, 2, 1).

6. Policies & Guidelines

This section contains the details of and links to the most relevant policies and course guidelines. For further details on University Policies please visit the [Policy Library](#)

6.1 Assessment Related Policies and Guidelines

University Policies & Guidelines

The University's assessment-related policies can be found in the [Griffith Policy Library](#).

Please refer to the following specific policies:

- [Assessment Policy](#)
- [Assessment Procedure for Students](#)

6.2 Other Policies and Guidelines

University Policies and Guidelines

Students are responsible for ensuring that they have read all sections of the Course Profile for the course/s in which they are enrolled in any enrolment period. The published online version of the Course Profile is the authoritative version and by the publication of the Course Profile online, the University deems the student has been notified of and read the course requirements. Variations to the Course Profile during the trimester of offer are not permitted except in exceptional circumstances and will be advised in writing to all enrolled students and via the [Learning@Griffith](#) website. Additional information regarding the content of this course may be published on the [Learning@Griffith](#) website.

Copyright matters

Copyright applies to all teaching materials and materials generated by students which substantially relate to Griffith University courses. *Students are warned against selling Griffith University teaching materials and their student notes online through commercial websites during and after their studies.* You will almost certainly be in breach of copyright law and Griffith's IT Code of Practice if you post these materials on the internet and commercial websites. Please refer to the [Copyright Guide for Students](#) for further information.

Health and Safety

Griffith University is committed to providing a safe work and study environment. However, all students, staff and visitors have an obligation to ensure the safety of themselves and those whose safety may be affected by their actions. Staff in control of learning activities will ensure as far as reasonably practical, that those activities are safe and that all safety obligations are being met. Students are required to comply with all safety instructions and are requested to report safety concerns to the University.

General health and safety information is available on the [Health, Safety and Wellbeing](#) website.

Other Key Student-Related Policies

All University policy documents are accessible to students via the [Griffith Policy Library](#) and links to key policy documents, in addition to those listed in 6.1 above, are included below for easy reference:

- [Student Communications Policy](#)
- [Health and Safety Policy](#)
- [Student Administration Policy](#)
- [Student Charter](#)
- [Student Review and Appeals Policy](#)
- [Student Review and Appeals Procedures](#)
- [Student Complaints Policy](#)

Other Course Guidelines

All students who did not complete the **Laboratory Induction** in first year must complete this induction. A link is available on the 2101NSC Learning@Griffith site (left hand menu)

All students to attend the laboratory must complete the '**SAFETY in the LABORATORY**' declaration (available in the lab manual) and submit to your demonstrator before starting your first laboratory class.

Learning Summary

Below is a table showing the relationship between the learning outcomes for this course, the learning activities used to develop each outcome and the assessment task used to assess each outcome.

Learning Outcomes

After successfully completing this course you should be able to:

- 1 Understand basic theoretical principles and use fundamental experimental methods of medicinal and bioinorganic chemistry.
- 2 Apply the knowledge and skills gained to practical situations in medicinal and bioinorganic chemistry by carrying out experiments and evaluating experimental data.
- 3 Acquire laboratory skills and carry out laboratory experiments (for students physically attend the laboratory).
- 4 Gain problem-solving skills by participation in tutorials and working through set problems.

Assessment & Learning Activities

LEARNING ACTIVITIES	LEARNING OUTCOMES			
	1	2	3	4
Inorganic Chemistry (Lecture Series)	●	●		●
Laboratory (Laboratory)	●	●	●	
Bioinorganic and Medicinal Inorganic Chemistry (Lecture Series)	●	●		●
ASSESSMENT TASKS				
Laboratory Component	●	●	●	
Assignment Questions based on Tutorial Work	●			●
Mid Trimester Exam	●	●		●
Long Answer Questions Based on Tutorial Work				●
End of Trimester Exam	●	●		●

Graduate Attributes

For further details on the Griffith Graduate please [click here](#)

Griffith University prepares influential graduates to be:

- [Knowledgeable and skilled, with critical judgement](#)
- [Effective communicators and collaborators](#)
- [Innovative, creative and entrepreneurial](#)
- [Socially responsible and engaged in their communities](#)
- [Culturally capable when working with First Australians](#)
- [Effective in culturally diverse and international environments](#)

This table demonstrates where each of the Griffith Graduate Attributes is taught, practised and assessed in this course.

University wide attributes

GRADUATE ATTRIBUTE	TAUGHT	PRACTISED	ASSESSED
Knowledgeable and skilled, with critical judgement	•	•	•
Effective communicators and collaborators	•	•	•
Innovative, creative and entrepreneurial	•	•	
Socially responsible and engaged in their communities	•	•	•
Culturally capable when working with First Australians			
Effective in culturally diverse and international environments		•	