



## Course Outline

**Code:** CHM210  
**Title:** Inorganic Chemistry

**School of:** Science & Engineering  
**Teaching Session:** Semester 2  
**Year:** 2020  
**Course Coordinator:** Dr David McKay Email: dmckay@usc.edu.au  
**Course Moderator:** Dr Peter Brooks

Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered.

### 1. What is this course about?

#### 1.1 Description

Inorganic chemistry explores the diversity of the periodic table and the applications of its elements from power generation, to new materials for lighting and metal-based drugs. In this course you will learn about the chemistry of each type of element – Transition Metal, Main Group Metal, Lanthanide, Actinide and Non-metal and how they influence everyday life. You will investigate redox reactions theoretically by balancing equations and practically by constructing an electrochemical cell.

#### 1.2 Course topics

Inorganic chemistry including electronic configurations, trends in the periodic table, coordination chemistry, colour, magnetism, redox reactions, balancing equations, electrochemistry, symmetry, bioinorganic chemistry and nuclear medicine.

### 2. What level is this course?

200 level Developing - Applying broad and/or deep knowledge and skills to new contexts. May require pre-requisites and introductory level knowledge/skills. Normally undertaken in the 2nd or 3rd year of an undergraduate program

### 3. What is the unit value of this course?

12 units

#### 4. How does this course contribute to my learning?

<b>Specific Learning Outcomes</b> On successful completion of this course you should be able to:	<b>Assessment Tasks</b> You will be assessed on the learning outcome in task/s:	<b>Graduate Qualities or Professional Standards mapping</b> Completing these tasks successfully will contribute to you becoming:
Analyse inorganic chemistry information	1. Literature Assignment; 2. Practical quizzes; 3. Practical report; 4. Final exam	Creative and critical thinkers.
Demonstrate and apply knowledge of inorganic chemistry	3. Practical quizzes 4. Final exam	Knowledgeable.
Communicate in scientific writing	1. Literature Assignment; 2. Report on the Practicals	Empowered. Engaged.

#### 5. Am I eligible to enrol in this course?

Refer to the [USC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

##### 5.1 Enrolment restrictions

Not Applicable

##### 5.2 Pre-requisites

SC1105

##### 5.3 Co-requisites

Nil

##### 5.4 Anti-requisites

CHM212

##### 5.5 Specific assumed prior knowledge and skills (where applicable)

Nil

#### 6. How am I going to be assessed?

##### 6.1 Grading scale

Standard – High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL)

##### 6.2 Details of early feedback on progress

There is a set of questions and answers for each week's lecture, providing feedback for that material. These questions will form the basis of the final exam.

There is a set of on-line questions for each practical, providing feedback on progress. These questions will form the basis of the practical quizzes.

### 6.3 Assessment tasks

Task No.	Assessment Tasks	Individual or Group	Weighting %	Duration / length	When should I submit?	Where should I submit it?
1	Literature Assignment	Individual	10%	Up to 500 words with diagrams and references	Week 4	Blackboard assignment submission
2	Practical Quizzes (5)	Individual	20%, 4%/quiz	10 minutes each: 50 min total	Practical On-line Quizzes are submitted during attended practical sessions or out-of-class with accompanying worksheet.	Laboratory/Blackboard
3	Practical report	Individual	30%	[1500-2000 words]	Week 13	[Blackboard assignment submission]
4	Final exam	Individual	40%	2 hours (1500 words)	Central exam period	Exam venue
			100%			

#### Assessment Task 1: Literature Assignment

<b>Goal:</b>	Research the preparation of a transition metal complex from the primary chemical literature using chemistry journals.
<b>Product:</b>	Up to 500-word assignment with diagrams
<b>Format:</b>	Title, structure of compound, its preparation and use.
<b>Criteria:</b>	Following instructions, searching and evaluating information.

#### Assessment Task 2: Practical Quizzes

<b>Goal:</b>	Demonstrate knowledge of theory underpinning laboratory chemistry
<b>Product:</b>	Five on-line multiple-choice quizzes
<b>Format:</b>	Students will complete 5 quizzes (10 min. each) based on the theory covered by the work in the practicals and worksheets.
<b>Criteria:</b>	Calculations and knowledge of theories underpinning the laboratory work

#### Assessment Task 3: Practical Report

<b>Goal:</b>	Analyse inorganic chemistry data and compare this with the literature to write individual reports to demonstrate that you can analyse and communicate inorganic chemistry information; participate in the laboratory or complete worksheets.
<b>Product:</b>	One 1500-2000 word written report. For more details, see Blackboard.
<b>Format:</b>	The report will include: Title, abstract, introduction, methods, results, discussion, conclusion, references- with focus on discussion of results.
<b>Criteria:</b>	Analyse inorganic chemistry information. Communicate in scientific writing.

#### Assessment Task 4: Final exam

<b>Goal:</b>	Demonstrate and apply knowledge of inorganic chemistry
<b>Product:</b>	2 hours (1500 words)
<b>Format:</b>	Multi-choice and short answer questions based on material from lectures, tutorials and laboratory activities.
<b>Criteria:</b>	Demonstrate and apply knowledge of inorganic chemistry.

### 7. What are the course activities?

#### 7.1 Directed study hours

The directed study hours listed here are a portion of the workload for this course. A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

*This course will be delivered via technology-enabled learning and teaching. All lectures will remain in this mode for Semester 2 2020. When government guidelines allow, students that elected on-campus study via the class selection process will be advised when on campus tutorials and practical sessions will resume.*

Location: Specific Campus(es) or online:	Directed study hours for location:
USC Sunshine Coast	Lecture: 2 hours per week Laboratory: 3 hours per fortnight or associated worksheets Tutorial: 1 hour per week
USC Moreton Bay	Lecture: 2 hours per week Laboratory: 3 hours per fortnight or associated worksheets Tutorial: 1 hour per week

#### 7.2 Course content

Week # / Module #	What key concepts/content will I learn?
1	Introduction to the course, Redox 1
2	Assess. Task 1; Intro to coordination chemistry
3	Redox 2
4	Valence bond theory
5	Molecular orbital theory
6	Transition metals and coordinate (dative) bonding
7	Ligands and nomenclature
8	Geometry and isomerism
9	Crystal Field theory
10	Nuclear Chemistry and Medicine
11	The Representative Elements
12	Solubility
13	Revision

Please note - course content is subject to change.

## **8. What resources do I need to undertake this course?**

Please note that course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Blackboard site. All details about assessment and guides to complete assessment tasks are in Blackboard. Please log in as soon as possible.

## 8.1 Prescribed text(s)

Please note that you need to have regular access to the resource(s) listed below as they are required:

Author	Year	Title	Publisher
Flowers et al.	2017	Chemistry	OpenStax, Chemistry. OpenStax CNX. 23 Nov 2017 <a href="http://cnx.org/contents/85abf193-2bd2-4908-8563-90b8a7ac8df6@9.524">http://cnx.org/contents/85abf193-2bd2-4908-8563-90b8a7ac8df6@9.524</a> .
Blackman, Bottle, Schmid, Mocerino, Wille	2019	Chemistry, 4th edition.	Wiley

## 8.2 Specific requirements

Laboratory coat, safety glasses, closed in footwear.

## 9. Risk management

The health and safety risk in this course may be rated moderate. It is your responsibility to familiarise yourself with the Health and Safety policies and procedures applicable within campus areas, specific to the course and relevant to the workshop, field site or organisation involved. You are also responsible for strictly following all controls instructed by the academic staff, course material or inductions. Risk assessments have been performed for each experiment and Material Safety Data Sheets are available at each laboratory session.

## 10. What administrative information is relevant to this course?

### 10.1 Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Blackboard, are electronically checked through SafeAssign. This software allows for text comparisons to be made between your submitted assessment item and all other work that SafeAssign has access to.

### 10.2 Assessment: Additional requirements

#### Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

- The final mark is in the percentage range 47% to 49.4%
- The course is graded using the Standard Grading scale
- You have not failed an assessment task in the course due to academic misconduct

### 10.3 Assessment: Submission penalties

Late submission of assessment tasks will be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day
- 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.

To request an extension, you must contact your Course Coordinator and supply the required documentation to negotiate an outcome.

#### 10.4 Study help

In the first instance, you should contact your tutor, then the Course Coordinator. Additional assistance is provided to all students through Academic Skills Advisers. To book an appointment or find a drop-in session go to [Student Hub](#).

Contact Student Central for further assistance: +61 7 5430 2890 or [studentcentral@usc.edu.au](mailto:studentcentral@usc.edu.au)

#### 10.5 Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website:

<http://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

#### 10.6 General Enquiries

In person:

- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC South Bank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **USC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **USC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- USC Moreton Bay - Service Centre, Building A – Ground Floor, 1 Moreton Bay Parade, Petrie
- **USC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

**Tel:** +61 7 5430 2890

**Email:** [studentcentral@usc.edu.au](mailto:studentcentral@usc.edu.au)