UNSW Course Outline

CHEM3031 Inorganic Chemistry: Transition Metals and Complexes - 2024

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General Course Information

Course Code : CHEM3031
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Science
Academic Unit : School of Chemistry
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course provides insight into the current state-of-art research where metals are used in

technologies such as semiconductors, batteries, solar cells, superconductors, and where metals are used in life such as photochemical processes, nitrogen fixation. This course showcases the importance of understanding the role of the metal in these systems. The key components of structural characterization relevant to this understanding are covered and the function derived from the structure expanded. The way chemistry can be used to tune structure and hence properties is shown to underpin all of these technologies and processes in life.

Students will engage in a series of flipped classes; lecture material is pre-recorded with follow up in person workshops each week. The laboratory activities link to the lecture content and also expand upon it.

This course is suitable for those seeking either a career in science/chemistry or who wish to develop their critical thinking and/or problem-solving skills.

Course Aims

This course provides insight into the current state-of-art research where metals are used in technologies such as semiconductors, batteries, solar cells & superconductors. This course showcases the importance of understanding the role of the metal in the aforementioned systems, it highlights the key components of structural characterization relevant to this understanding and the function derived from the structure expanded upon from previous courses.

Relationship to Other Courses

This course follows on from the content covered in CHEM2031.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Apply a range of modern characterisation methods (IR, NMR, UV-Vis, Magnetometry, XRD & Neutron Scattering) used to analyse inorganic compounds and apply relevant technical knowledge to identify compounds.
CLO2 : Apply a comprehensive knowledge of inorganic chemistry to rationalize how modern technologies function (ranging from semiconductors, batteries, superconductors to solar cells).
CLO3 : Describe the reaction mechanisms that can occur in inorganic materials.
CLO4 : Evaluate current literature and present this in relation to the observed properties of inorganic compounds covered in this course.
CLO5 : Present data and provide rational conclusions drawn from experiments conducted in the laboratory

Course Learning Outcomes	Assessment Item
CLO1 : Apply a range of modern characterisation methods (IR, NMR, UV-Vis, Magnetometry, XRD & Neutron Scattering) used to analyse inorganic compounds and apply relevant technical knowledge to identify compounds.	• Laboratory Reports • Examination • Assignments
CLO2 : Apply a comprehensive knowledge of inorganic chemistry to rationalize how modern technologies function (ranging from semiconductors, batteries, superconductors to solar cells).	• Laboratory Reports • Examination • Assignments
CLO3 : Describe the reaction mechanisms that can occur in inorganic materials.	• Laboratory Reports • Examination • Assignments
CLO4 : Evaluate current literature and present this in relation to the observed properties of inorganic compounds covered in this course.	• Laboratory Reports • Assignments
CLO5 : Present data and provide rational conclusions drawn from experiments conducted in the laboratory	• Examination • Laboratory Reports

Learning and Teaching Technologies

Moodle - Learning Management System

Additional Course Information

none

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Laboratory Reports Assessment Format: Individual	30%	Due Date: See Moodle
Examination Assessment Format: Individual	55%	Due Date: See Moodle
Assignments Assessment Format: Individual	15%	Due Date: See Moodle

Assessment Details

Laboratory Reports

Assessment Overview

You will perform a series of experiments to develop your laboratory skills. You will collect and analyze data, and use this analysis as the basis for writing your reports.

You will be provided with formative feedback during the laboratory sessions on the skills that you are acquiring, summative feedback will be provided for your laboratory reports.

Each lab report is equally weighted and the submission of the reports will be distributed throughout the term (typically weekly, submissions due the week after completion of the experiment – note that some experiments occur over 2-weeks).

There is a minimum laboratory attendance requirement for this course (80%) and all students must complete appropriate pre-lab and safety documentation.

Course Learning Outcomes

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Detailed Assessment Description

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There is a minimum laboratory attendance requirement for this course (80%) and all students must complete appropriate pre-lab and safety documentation.

Assignment submission Turnitin type

Not Applicable

Hurdle rules

You must gain at least 50% of the lab marks in this course in order to be eligable to pass.

Examination

Assessment Overview

You will complete an exam where you will apply the knowledge that you have gained.

The exam occurs in the formal examination period and is typically 2 hours in length. The exam is made up of a series of short and longer written response questions that cover the material of each lecturer along with the laboratory experiments. The exam is summative, you will receive an overall grade but there is no additional feedback mechanism in place.

Hurdle requirement: You must obtain 35% of the available marks in the examination in order to the eligible to pass this course.

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Assignment submission Turnitin type

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Hurdle rules

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Assignments

Assessment Overview

You will engage in 3 assignments; each one equally weighted.

Each assignment will be set by a different lecturer with submission dates spread equally throughout the course (typically due at the end of the lecturer's teaching block). Assignments will be assessed using a rubric, and written feedback will be provided.

Each assignment will be related to the content that has been presented, you will be expected to first answer a series of short questions (that allow the assessor to gauge your understanding of the topic) before a longer question is set, this longer question will require you to research around the topic and allows you to develop your research and communication skills.

Course Learning Outcomes

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Assignment submission Turnitin type

Not Applicable

General Assessment Information

none

Grading Basis

Standard

Requirements to pass course

You must gain at least 50% overall and; gain at least 35% of the marks available in the examination, plus gain at least 50% of the laboratory marks in order to the eligible to pass this course.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Online Activity	Pre-recorded lectures
	Laboratory	Lab experiment
	Workshop	Face-to-face workshop session
Week 2 : 3 June - 9 June	Online Activity	Pre-recorded lectures
	Laboratory	Lab experiment
	Workshop	Face-to-face workshop session
Week 3 : 10 June - 16 June	Online Activity	Pre-recorded lectures
	Laboratory	Lab experiment
	Workshop	Face-to-face workshop session
Week 4 : 17 June - 23 June	Online Activity	Pre-recorded lectures
	Laboratory	Lab experiment
	Workshop	Face-to-face workshop session
Week 5 : 24 June - 30 June	Online Activity	Pre-recorded lectures
	Laboratory	Lab experiment
	Workshop	Face-to-face workshop session
Week 7 : 8 July - 14 July	Online Activity	Pre-recorded lectures
	Laboratory	Lab experiment
	Workshop	Face-to-face workshop session
Week 8 : 15 July - 21 July	Online Activity	Pre-recorded lectures
	Laboratory	Lab experiment
	Workshop	Face-to-face workshop session
Week 9 : 22 July - 28 July	Online Activity	Pre-recorded lectures
	Laboratory	Lab experiment
	Workshop	Face-to-face workshop session
Week 10 : 29 July - 4 August	Online Activity	Pre-recorded lectures
	Laboratory	Lab experiment
	Workshop	Face-to-face workshop session

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Course Resources

Course Evaluation and Development

There is a course representative system that we utalise to gain insight into how students are finding the course in term, we also use myExperience data and comments to plan and enact changes to the course.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Lauren Macre adie		Room 224, Dalton Building		By appointment	Yes	Yes

Other Useful Information

Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe, harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.
- Maintain the University's reputation and good standing.

For more information, visit the UNSW Student Code of Conduct Website.

Academic Honesty and Plagarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.
Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.
Further information about academic integrity, plagiarism and the use of AI in assessments can

be located at:

- The Current Students site,
- The ELISE training site, and
- The Use of AI for assessments site.

The Student Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct

Submission of Assessment Tasks

Penalty for Late Submissions

UNSW has a standard late submission penalty of:

- 5% per day,
- for all assessments where a penalty applies,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile Tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to be advised of the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: https://student.unsw.edu.au/special-consideration

Important note: UNSW has a "fit to sit/submit" rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination

or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

Faculty-specific Information

Additional support for students

- The Current Students Gateway
- Student Support
- Academic Skills and Support
- Student Wellbeing, Health and Safety
- Equitable Learning Services
- UNSW IT Service Centre
- Science EDI Student Initiatives, Offerings and Guidelines

School-specific Information

UNSW Changes to Special Consideration: Short Extension

The School of Chemistry has carefully reviewed all of its assessments to determine whether they are suitable for automatic short extensions as set out by the UNSW Short Extension Policy. The current deadline structures for all assessment tasks in the School of Chemistry already accommodate the possibility of unexpected circumstances that may lead students to require additional time for submission. **The School of Chemistry has opted out of the UNSW Short Extension provision for all its courses,** and we have already integrated flexibility into our assessment deadlines. This decision is subject to revision in response to the introduction of new course offerings. All students may still apply for Special Consideration for any assessment via the usual procedures.

School Contact Information

Level 1, Dalton Building (F12)

W: www.chemistry.unsw.edu.au

Also see: ***Contacts and Support*** section of the course Moodle page (where applicable)