Faculty of Science, Medicine and Health School of Chemistry and Molecular Bioscience



CHEM241: Physical and Inorganic Chemistry

Subject Outline

6 credit points

Subject Information

Autumn, 2024, Wollongong On Campus

On-Campus Delivery This subject is delivered in-person and includes on-campus or other location-based learning activities that cannot be undertaken by students studying Online/Distance. Students unable to attend campus or any other nominated physical delivery location should not enrol in this subject.

Subjects with a delivery mode of On Campus and/or Flexible with International Student enrolments will be delivered in accordance with the ESOS National Code. That is, online learning experiences (such as lectures, tuition, and resources) will be <u>supplementary</u> to in-person learning experiences such as scheduled classes and/or scheduled contact hours.

UOW may need to change teaching locations, teaching delivery and/or assessment delivery at short notice to ensure the safety and well-being of students and staff in response to the COVID-19 pandemic or other public health requirements.

The Faculty of Science, Medicine and Health

The Faculty of Science, Medicine and Health offers a range of undergraduate and postgraduate programs designed to meet the needs of a diverse student population. We carry out world-leading research which is strongly aligned with our teaching program.

As a student of our faculty, you will be actively engaged in learning with extensive clinical experiences, use of advanced educational technologies and opportunities for enriching work experience. More information about the Faculty of Science, Medicine and Health and our School is available on our web pages: https://www.uow.edu.au/science-medicine-health/

Teaching Staff

Teaching Role	Name	Telephone	Email	Room	Consultation Times
Coordinator	Associate Professor Christopher Richardson	+61 2 4221 3254	crichard@uow.edu.au	18.114	Email for an appointment
Lecturer	Associate Professor Carolyn Dillon	+61 2 4221 4930	carolynd@uow.edu.au	18.129	Email for an appointment

Lecturer	Associate Professor Christopher Hyland	+61 2 4221 4953	chrhyl@uow.edu.au	18.G26	Email for an appointment
Lecturer	Professor Haibo Yu	+61 2 4221 4235	hyu@uow.edu.au	41.112	Email for an appointment
Lecturer	Professor Adam Trevitt	+61 2 4221 5545	adamt@uow.edu.au	42.213	Email for an appointment
Lecturer	Dr Matthew Gyton	TBA		TBA	
Tutor	Mr Hairuddin Idris		hidris@uow.edu.au		Email for an appointment
Tutor	Dr Philip Chevis		pchevis@uow.edu.au		Email for an appointment

Expectations of Students

UOW values are intellectual openness, excellence and dedication, empowerment and academic freedom, mutual respect and diversity, recognition and performance. We will provide a safe, equitable and orderly environment for the University community, and expect each member of our community to behave responsibly and ethically (UOW Student Conduct Rules https://documents.uow.edu.au/about/policy/learning/index.html).

We expect that students demonstrate these values and professional behaviour, both face to face and online, making genuine efforts to complete their studies successfully, arriving on time to class, taking part constructively in class discussions and activities, demonstrating appropriate professional and ethical conduct in all communication with UOW staff and community members, and submitting assignments on time (or completing a request for Academic Consideration in advance if needed).

Communication and eLearning Etiquette

Guidelines on the use of email to contact teaching staff, mobile phone use in class and information on the university guide to eLearning 'Netiquette' can be found at https://www.uow.edu.au/student/learningcoop/software/emailetiquette/index.html

Guiding Communication Principles for Students

Moodle Announcements will be the primary platform for communication of general information to students

- Students should ensure they regularly check the main announcements forum at the top of each subject's Moodle site. Information distributed via a Moodle Announcement MAY not be duplicated on any other forum on the Moodle site.
- It is the student's responsibility to check all subject Moodle sites regularly for information and notifications.

SOLS messages will be used for all central communication relating to the following:

- Administrative matters relating to student enrolment
- Critical information relating to course or subject, e.g. Changes to assignments, policy updates, class cancellations or changes
- Timetable information
- Security and emergency information
- Students are encouraged to check SOLS messages daily as these messages are often of high priority

SOLS and Moodle announcements can NOT be responded to.

Email

Communication to UOW staff by students should only be via a UOW email account

Remember to use the same principles when communicating online as you would face-to-face. Be clear and respectful and communicate with the same consideration you would expect from others.

Related Policies

- Online and email etiquette https://tr.uow.edu.au/uow/file/976ffde2-b892-42cf-b20b-5c7a65bc08cc/1/Overview%20of%20Online%20and%20Email%20Etiquette.pdf
- Using UOWmail https://www.uow.edu.au/student/learning-co-op/technology-and-software/uowmail/
- Inclusive language guideline https://documents.uow.edu.au/about/policy/students/UOW140611.html
- The Student Charter https://www.uow.edu.au/student/charter/

Cyber Bullying

The University is committed to providing a safe, respectful, equitable and orderly environment for the University community, and expects each member of that community to behave responsibly and ethically. Students must comply with the University's <u>Student Conduct Rules</u> and related policies including the <u>IT Acceptable Use Policy</u> and <u>Bullying Prevention Policy</u>, whether undertaking their studies face-to-face, online.

For more information on appropriate communication and etiquette in the online environment please refer to the guide <u>Online and Email Etiquette</u> or at <u>https://www.uow.edu.au/student/learning-co-op/technology-and-software/email-etiquette/.</u>

Related Policies

Using UOWmail https://www.uow.edu.au/student/learning-co-op/technology-and-software/uowmail/

Inclusive language guideline https://documents.uow.edu.au/about/policy/students/UOW140611.html

Copyright

Commonwealth of Australia

Copyright Regulations 1969

© 2024 University of Wollongong

The original material prepared for this guide is covered by copyright. Apart from fair dealing for the purposes of private study, research, criticism or review, as permitted under the Copyright Act, no part may be reproduced by any process without written permission.

Hardcopies of this document are considered uncontrolled please refer to your Moodle site for the latest version.

Table of Contents

Section A: General Information	7
Learning Outcomes	7
Subject Learning Outcomes	7
Subject Description	7
Course Handbook	7
Subject Details: Practical Activities, eLearning, Readings and Materials	7
Subject eLearning	7
Safety Guidelines	7
FOUNDATIONAL Work Integrated Learning	8
Additional Subject Details	8
Major Text(s)	8
Recommended Readings and Other Resources	8
Lectures, Tutorials and Attendance Requirements	9
Lecture Times *	
Lecture Program *	9
Additional Lecture Comments	9
Lecture Recording	10
Your Privacy - Lecture Recording	11
Recent Improvements to Subject	
Extraordinary Changes to the Subject Outline	11
Learning Analytics	
Section B: Assessment	13
Assessment Summary	
Minimum Requirements to Pass this Subject	
Minimum Student Attendance and Participation	
UOW Grade Descriptors	
Assessment Learning Outcome Matrix	
Extensions	
Late Submission Penalty	
Collection	
Retention	
Scaling	
Supplementary Assessment	
Review and Appeal of Academic Decisions	
Assessment Quality Cycle	
Assessment Quanty Cycle Academic Integrity	
Referencing	
Section C: General Advice for Students - Policies and Procedures	18
Student Services and Support	
Student Support Coordinator (SSC)	
Student Advocacy Service	18
Student Central	
Library Services	19
Academic Integrity Policy	19
Code of Practice - Research	19
Code of Practice - Honours	
The Code of Practice - Work Integrated Learning (Professional Experience)	19
Copyright Policy	
Course Progress Policy	
Examination Rules and Procedures	
Ethical or Religious Objection by Students to the Use of Animal and Animal Products in	Coursework
Subjects	
Coursework Rules	
Human Research Ethics	20

Inclusive Language Guidelines	20
Intellectual Property Policy	20
Review and Appeal of Academic Decisions Policy	20
Student Academic Consideration Policy	
The Student Charter - Your Rights and Responsibilities	
Student Assignment of Intellectual Property (IP) Policy	
Student Conduct Rules	
Teaching and Assessment: Assessment and Feedback Policy	21
Teaching and Assessment: Code of Practice - Teaching	
Teaching and Assessment: Subject Delivery Policy	
Workplace Health & Safety Policy	

Section A: General Information

Learning Outcomes

Subject Learning Outcomes

On successful completion of this subject, students will be able to:

- 1. Demonstrate an understanding of the laws of thermodynamics and thermodynamic functions (ΔH , ΔG , ΔS and K) and their application to chemical systems
- 2. Discuss introductory quantum mechanical principles including particle-in-a-box, atomic orbitals and chemical bonding
- 3. Explain fundamental chemical components in coordination chemistry, organometallic chemistry, and bioinorganic chemistry
- 4. Develop laboratory skills and perform experiments safely
- 5. Interpret experimental results and communicate conclusions in written and/or oral formats
- 6. Employ basic mathematics to solve quantitative chemical problems

Subject Description

The study of physical and inorganic chemistry provides foundations for the vast areas of metal-based catalysis, energy generation and storage, high-performance magnetic materials, and more areas that align with the United Nations Sustainable Development Goals (UNSDGs) (e.g. energy conversion, clean water, resource sustainability, climate). This subject is an introduction to modern metal-based coordination chemistry and essential components of physical chemistry. Students will learn about theories central to modern coordination chemistry, in particular crystal field theory, and explore fundamentals of magnetism, bioinorganic chemistry and organometallic chemistry. Students will obtain fundamental skills in preparing and analysing data and compounds and have opportunities for teamwork and to develop and improve written communication via laboratory reports.

Course Handbook

Information about subject pre-requisites, co-requisites and restrictions as well as course completion requirements and Course Learning Outcomes can be found in the Course Handbook https://www.uow.edu.au/handbook/index.html.

Subject Details: Practical Activities, eLearning, Readings and Materials

Subject eLearning

The University uses the eLearning system Moodle to support all coursework subjects. The subject Moodle site can be accessed via your SOLS page.

Safety Guidelines

The rules below are general rules that are required when participating in labs or practical activities. Before commencing these activities you are to ensure that you understand specific procedures and policy related to safety.

- All first year students undertaking Chemistry (CHEM101/102/104/105) must complete the Moodle WHS Induction (see details below)
- Before commencing any activity you are to ensure that you understand specific procedures and policy related to the lab in which you work and safety in general.
- You may need to review a Risk Assessment and complete a Participant Acknowledgement form before commencing any experiments/practical work. These materials will be made available by the lab supervisor/Subject Coordinator.

- You must inform the Subject Coordinator of any medical conditions which may impact upon your ability to participate in these activities before commencing the practical.
- All Reasonable Adjustment cases (Access Plans) must be discussed with the Subject Coordinator prior to commencing the activity.
- Participation in the lab/practical/field/simulation activities may be denied to students who do not abide by these, and other conditions which may be specified by the Subject Coordinator.
- Never use any equipment or attempt any experiment without checking the safety implications with your laboratory supervisor or experienced delegated laboratory worker.
- Undergraduate students are not permitted to work after hours unless there is appropriate approval and supervision.

FOUNDATIONAL Work Integrated Learning

This subject contains elements of 'Foundational WIL'. Students in this subject will observe, explore or reflect on possible career pathways or a work-related aspect of their discipline.

Additional Subject Details

https://www.uow.edu.au/united-nations-sustainable-development-goals/sdg-subjects-and-courses/
This subject aligns with the United Nations Sustainable Development Goals (SDGs) and is part of UOW's SDG
Portfolio which aims to ensure that our students are well informed global citizens that can continue to contribute
to realising sustainable development through their studies and careers by being proactive, responsible and
educated in relation to how realising the Global Goals will better the world.

Major Text(s)

Inorganic Chemistry: Pearson New International Edition, edition 5, by Miessler & Fischer & Tarr - Buy here: https://bit.ly/3Gxmt1T

There is no required text book for the physical chemistry component of this subject.

Atkins "Physical Chemistry" is a good reference. There are copies in the library. Atkins and de Paula "Elements of Physical Chemistry" is also a good reference. Copies in the library too.

If there is a textbook available for purchase, you can find the details at University Bookshop https://unishop.uow.edu.au/

Recommended Readings and Other Resources

The following references complement the prescribed readings and textbooks:

- The Organometallic Chemistry of the Transition Metals, Robert H. Crabtree, 4th or 5th edition, ISBN-10 0470257628
- Organometallic Chemistry, Gary O. Spessard, Gary L. Miessler, 2nd edition, ISBN-10 0195330994
- Organometallics: a concise introduction, Christoph Elschenbroich, Albrecht Salzer
- Library link: http://iii.library.uow.edu.au/record=b1160238
- Physical Chemistry (Atkins, 9th, 10th (or later) Ed.)
- Elements of Physical Chemistry (5th Ed. or later)

This is not an exhaustive list of references. Students should also use the library catalogue and databases to locate additional resources.

Lectures, Tutorials and Attendance Requirements

Lecture Times *

UOW may need to change teaching locations, teaching delivery and/or assessment delivery at short notice to ensure the safety and well-being of students and staff in response to the COVID-19 pandemic or other public health requirements.

Up to date timetable and delivery information is located at http://www.uow.edu.au/student/timetables/index.html

You can access your personal timetable by logging into SOLS and selecting 'My Timetable'

Lecture Program *

Week	Commencing	Topics Covered
	15 Apr 2024	Mid-Session Recess
	03 Jun 2024	Study Recess
	08 Jun 2024	Examinations
	15 Jun 2024	Examinations

^{*} The above times and program may be subject to change. Students will be notified of any change via SOLS.

Additional Lecture Comments

The following are examples of the topics to be covered in this subject. This is not an exhaustive list and may be subject to change.

A Timetable will be available from the eLearning site in week 1 of session. A prospective timetable for the subject can be found below.

Essential Physical Chemistry

- General introduction to enthalpy, entropy, Gibbs function
- Bond energy, proton affinity (PA), electron affinity (EA), ionization potential (IP)
- Quantization; wave/particle duality, particle in a 1D Box
- Linear Combination of Atom Orbitals (LCAO)

Periodicity

• Trends amongst the *d*-block elements

Introduction to coordination chemistry

- Bonding
- Coordination geometries and numbers
- Reactions of coordination complexes; Ligand substitution
- Formation constants
- HSAB theory
- Nomenclature
- Isomers and chirality

Crystal Field Theory

- Theory and background to Crystal Field Theory
- Electronic transitions

- Relationship to spectroscopic properties
- Relationship to magnetism in coordination complexes

Magnetism in solids

- Types of magnetism
- Ferromagnets
- Antiferromagnets

Organometallic Chemistry

- Introducing and using the 18-electron rule
- The nature of bonding to transition and main group metals
- Understanding π -ligand binding to transition metals
- Introduction to organometallic reactions at the metal
- Introduction of homogenous catalysis by organometallic complexes

		Lab 1	Lab 2	Lecture/Tute A	Lecture/Tute B
		Monday	Tuesday	Monday	Wednesday
		13:30	8:30	10:30	10:30
		43.201	43.201	24.G03	19.1064
Starting	Week				
26-Feb	1			PCHEM LT	PCHEM LT
4-Mar	2	PCHEM Lab 1	PCHEM Lab 1	PCHEM LT	PCHEM LT
11-Mar	3	PCHEM Lab 2	PCHEM Lab 2	PCHEM LT	PCHEM LT
18-Mar	4	PCHEM Computer Lab 17-110B		PCHEM LT	PCHEM LT
25-Mar	5			PCHEM Quiz	ICHEM LT
1-Apr	6	Easter Monday		ICHEM LT	ICHEM LT
8-Apr	7	ICHEM Lab 1	ICHEM Lab 1	ICHEM LT	ICHEM LT
15-Apr		Recess	Recess	Recess	Recess
22-Apr	8	ICHEM Lab 1	ICHEM Lab 1	ICHEM LT	ICHEM LT
29-Apr	9	ICHEM Lab 2	ICHEM Lab 2	ICHEM LT	ICHEM Quiz
6-May	10	ICHEM Lab 2	ICHEM Lab 2	ICHEM LT	ICHEM LT
13-May	11	ICHEM Lab 2	ICHEM Lab 2	ICHEM LT	ICHEM LT
20-May	12			ICHEM LT	ICHEM LT
27-May	13				

Lecture Recording

The University of Wollongong supports the recording of UOW educational content as a supplemental study tool, to provide students with equity of access, and as a technology-enriched learning strategy to enhance the student experience.

If you make your own recording of a lecture, class, seminar, workshop or any other educational session provided as part of your course of study you can only do so with the explicit permission of the lecturer and those people who are also being recorded.

You may only use educational content recorded through the delivery of subject or course content, whether they are your own or recorded by the university, for your own educational purposes. Recordings cannot be altered, shared or published on another platform, without permission of the University, and to do so may contravene the University's Copyright Policy, Privacy Policy, Intellectual Property Policy, IT Acceptable Use Policy and Student Conduct Rules. Unauthorised sharing of recordings may also involve a breach of law under the Copyright Act 1969.

Most lectures in this subject will be recorded, when they are scheduled in venues that are equipped with lecture recording technology, and made available via the subject Moodle site within 48 hours.

Your Privacy - Lecture Recording

In accordance with the Student Privacy & Disclosure Statement, when undertaking our normal teaching and learning activities, the University may collect your personal information. This collection may occur incidentally during the recording of lectures in equipped venues (i.e. when your identity can be ascertained by your image, voice or opinion), or via the delivery of online content therefore the University further advises students that:

- Lecture recordings are made available to students, university staff, and affiliates, securely on the university's IT Platforms and via the subject Moodle eLearning site;
- Recordings are made available only for the purpose for which they were recorded, for example, as a supplemental study tool or to support equity and access to educational resources;
- Recordings are stored securely for up to four years

If you have any concerns about the use or accuracy of your personal information collected in a lecture recording, you may approach your Subject Coordinator to discuss your particular circumstances.

The University is committed to ensuring your privacy is protected. If you have a concern about how your personal information is being used or managed please refer to the University's Privacy Policy or consult our Privacy webpage https://www.uow.edu.au/privacy/

Recent Improvements to Subject

The Faculty of Science, Medicine and Health is committed to continual improvement in teaching and learning. In assessing teaching and learning practices in a subject, the Faculty takes into consideration student feedback from many sources. These sources include direct student feedback to tutors and lecturers, feedback through Science, Medicine and Health Central, responses to the Subject and Course Evaluation Surveys. These important student responses are used to make ongoing changes to subjects and courses. This information is also used to inform systemic comprehensive reviews of subjects and courses.

This subject is running for the first time in 2024.

Extraordinary Changes to the Subject Outline

In extraordinary circumstances the provisions stipulated in this Subject Outline may require amendment after the Subject Outline has been distributed. All students enrolled in the subject must be notified and have the opportunity to provide feedback in relation to the amendment, where practicable, prior to the amendment being finalised.

Learning Analytics

Learning Analytics data (such as student engagement with Moodle, access to recorded lectures, University Library usage, task marks, and use of SOLS) may be used by the Subject Coordinator and your faculty's Head of Students to assist in analysing student engagement, and to identify and recommend support to students who may be at risk of failure. If you have questions about the kinds of data the University uses, how we collect it, and how we protect your privacy in the use of this data, please refer to https://www.uow.edu.au/about/privacy/index.html

Section B: Assessment

Assessment Summary

Assessment Item	Form of Assessment	%
Assessment 1	Quiz	15%
Assessment 2	Quiz	10%
Assessment 3	Lab/Prac/Simulation	40%
Assessment 4	Participation	10%
Assessment 5	Exam	25%
	TOTAL MARKS	100%

Please note: Copies of student work may be retained by the University in order to facilitate quality assurance of assessment processes.

A formative assessment activity (with written or verbal feedback) will be conducted before census date - please see <u>UOW Key Dates.</u>

Assessment 1: Quiz - Quiz 1

Marking Criteria	Marks will be awarded based on the answers to the questions assigned.
Length	55 minutes
Weighting	15%
Assessment Due	Week beginning 25 Mar 2024 (In lecture in Session Week 5)
Type of Collaboration	Individual assessment
Style and format	In-class quiz. Administered through Moodle interface or paper-based. Submitted at the end of the class.
Assessment submission	Submit a hardcopy to your tutor/demonstrator in class or complete online.
Assessment return	Two weeks after due date.
Detailed information	A quiz for students to see how well they are doing.

Assessment 2: Quiz - Quiz 2

Marking Criteria	Marks will be awarded based on the answers to the questions assigned.
Length	55 minutes
Weighting	10%
Assessment Due	Week beginning 29 Apr 2024 (In lecture in Session Week 9)
Type of Collaboration	Individual assessment
Style and format	
Assessment submission	Submit a hardcopy to your tutor/demonstrator in class or complete online.
Assessment return	Two weeks after submission.
Detailed information	A quiz for students to see how well they are doing.

Assessment 3: Lab/Prac/Simulation - Lab reports

Marking Criteria	Marks will be allocated based on data collection and analysis (incl. accuracy and precision), performance in the laboratory, answers to questions, lab reports, and the submission of samples, where appropriate.
Length	A mixture of Moodle quiz, templated reports, self-prepared reports.
Weighting	40%
Assessment Due	12 Mar 2024 (Tuesday in Session Week 3) 18 Mar 2024 (In workshop in Session Week 4) 25 Apr 2024 (Thursday in Session Week 8) 23 May 2024 (Thursday in Session Week 12) Final submission time: 5:00pm
Type of Collaboration	Individual assessment
Style and format	PCHEM Experiments (experiments 1 and 2) are templated and submitted through Moodle/Turnitin. The third experiment may be assessed by a Moodle quiz or marked in-lab. The fourth experiment is a laboratory report that must be word processed and then submitted via Moodle. Further guidance is found in the laboratory manual available from the CHEM241 Moodle site. All assessments are done individually.
Assessment submission	Online via Moodle
Assessment return Two weeks after due date	
Detailed information	The report for experiment 4 must be word processed and submitted in PDF. Hand written reports will not be accepted.

Assessment 4: Participation - Participation

rissessificate in a diciput	ion I underpution
Marking Criteria	
Length	
Weighting	10%
Assessment Due	To Be Announced
Type of Collaboration	Individual assessment and group work
Style and format	Attendance and participation in the lectures, tutorials and laboratories are fundamental to passing the subject. Participation will be assessed by the staff taking the lectures, tutorials and laboratories.

Assessment 5: Exam - Final Exam

Marking Criteria	Marks awarded based upon correctness to the questions.
Length	3 hours
Weighting	25%
Assessment Due	The final exam will be held during the UOW exam period, and students should ensure they are available during this period. Students will receive a SOLSmail advising when full details of the delivery format, and date of the final exam are available in the SOLS Exam Timetable.
Type of Collaboration	Individual assessment
Style and format	Written answers and calculations to questions.
Detailed information	This final exam will be an invigilated, on campus exam held during the exam period.

Minimum Requirements to Pass this Subject

To receive a clear pass in this subject a total mark of 50% or more and meeting all of the subject learning outcomes (SLOs) must be achieved. In addition, failure to meet any of the minimum performance requirements is grounds for awarding a Technical Fail (TF) in the subject, even where total marks accumulated are greater than 50%.

The minimum performance requirements for this subject are:

- complete all tasks (includes practical laboratory tasks) and submit the appropriate assessment (as examples, submission of required laboratory reports or Moodle quizzes or in-person quizzes)
- Obtain a pass mark or better (50% or more of the available marks) over all practical assignments (assessment task 2)
- Obtaining a pass mark or better (50% of the available marks) over all quizzes (assessment task 1)
- meet the minimum participation requirements, as set out below

Minimum Student Attendance and Participation

Practical Laboratories: Student attendance is compulsory, and students must attend 100% of classes. Absences will require the submission of an application for Academic Consideration via SOLS and the presentation of suitable documentation, for example a Medical Certificate, to Student Central as soon as practical. For further details about applying for academic consideration visit the Student Central webpage: http://www.uow.edu.au/student/central/academicconsideration/index.html

Introduction to the Subject Session: Attendance is compulsory for this session and attendance is recorded. **Tutorials:** Tutorial attendance is not compulsory. Please note that there is up to 10% available to students if they attend and participate in all the tutorials. Attendances are recorded.

UOW Grade Descriptors

The UOW Grade Descriptors are general statements that communicate what our grades represent, in terms of standards of performance, and provide a frame of reference to ensure that assessment practice across the University is appropriate, consistent and fair. Grade Descriptors are expressed in general terms so that they are applicable to a broad range of disciplines. Grade Descriptors are available here https://www.uow.edu.au/student/exams/results/. For more information on the UOW grade descriptors refer to the Teaching and Assessment: Assessment and Feedback Policy: https://documents.uow.edu.au/about/policy/alphalisting/UOW222910.html

Assessment Learning Outcome Matrix

		Measures - Assessment weighting					
Learning Outcomes	Quiz 1	Quiz 2	Lab reports	Participation	Final Exam		
	(15%)	(10%)	(40%)	(10%)	(25%)		
Demonstrate an understanding of the laws of thermodynamics and thermodynamic functions (ΔH , ΔG , ΔS and K) and their application to chemical systems	✓		~	~	✓		
Discuss introductory quantum mechanical principles including particle-in-a-box, atomic orbitals and chemical bonding	✓		✓	✓	√		
Explain fundamental chemical components in coordination chemistry, organometallic chemistry, and bioinorganic chemistry		✓	√	✓	√		
Develop laboratory skills and perform experiments safely			✓				

		Measures - Assessment weighting				
Learning Outcomes	Quiz 1	Quiz 2	Lab reports	Participation	Final Exam	
	(15%)	(10%)	(40%)	(10%)	(25%)	
Interpret experimental results and communicate conclusions in written and/or oral formats			✓			
Employ basic mathematics to solve quantitative chemical problems	✓	✓	✓	✓	√	

Submission, Retention and Collection of Written Assessment

Assessed work must be handed in by the date and time listed under each assessment task. All assessment tasks must represent the enrolled student's own ORIGINAL work and must not have been previously submitted for assessment in any formal course of study.

Extensions

Students requesting extensions of time to submit an assessment task, deferred exam, alternative form of assessment or exemption of a compulsory attendance requirement must apply online via SOLS and provide documentary evidence within three working days of the assessable item's due date for their request to be considered. For information on the Policy, eligibility and how to apply see: https://www.uow.edu.au/student/admin/academic-consideration/

Late Submission Penalty

Late submissions will receive a penalty of 5% per day (or part thereof) of the total possible marks for the assessment task for up to ten (10) days after the due date and time for submission (including weekends, and public holidays), or, where an extension has been granted, for up to ten (10) days after the nominated extension deadline. For the purposes of this penalty a weekend (Saturday and Sunday) will be regarded as two days.

No marks will be awarded for work submitted:

- more than ten (10) days after the due date, or
- after the assessment has been returned to the students; whichever is applicable.

In such an instance, a mark of zero and a result of Fail for the task will be applied.

Note: Assessments must still be submitted to meet minimum performance requirements even though no mark is to be awarded.

Quiz Completion

Where there is a quiz component, any student who has not attempted and submitted a quiz within the specified timeframe will receive 0 (zero) marks for this assessment type. The quiz will not be reopened, and no alternative assessment will be set without extenuating circumstances and an approved academic consideration application. Late penalties do not apply to quizzes. If a student attempts a quiz but for technical issues is not able to submit the quiz, students must show evidence and apply for an academic consideration to sit a supplementary quiz.

Collection

Students will be notified when they can collect or view their marked assessment. In accordance with University Policy marked assessments will usually only be held for 21 days after the declaration of marks for that assessment.

Retention

The university may retain copies of student work in order to facilitate quality assurance of assessment processes, in support of the continuous improvement of assessment design, assessment marking and for the review of the subject. The University retains records of students' academic work in accordance with the University Records Management Policy and the State Records Act 1988 and uses these records in accordance with the University Privacy Policy and the Privacy and Personal Information Protection Act 1998.

Scaling

Marks awarded for any assessment task or part of any assessment task, including an examination may be subject to scaling at the end of the session. Marks will be scaled only when unpredicted circumstances occur and in order to ensure fairness of marking across groups of students. The method of scaling will depend on the type of scaling required by the circumstances. When scaling is deemed necessary, it will follow a detailed consideration by the Unit Assessment Committee and/or the Faculty Assessment Committee of the marks of the group of students concerned. Scaling will not affect any individual student's rank order within their cohort. For more information please refer to Standards for the Finalisation of Student Results Schedule 1: Scaling Guidelines https://www.uow.edu.au/about/policy/UOW039331.html for details.

Supplementary Assessment

Supplementary assessment may be offered to students whose performance in this subject is close to that required to pass the subject, and are otherwise identified as meriting an offer of a supplementary assessment. The Subject Coordinator will determine the precise form of supplementary assessment at the time the offer of a supplementary is made. In some circumstances you may be offered a supplementary exam. For more information about Supplementary Exams refer to: http://www.uow.edu.au/student/exams/aboutsupp/index.html

Review and Appeal of Academic Decisions

A student may request an explanation of a mark for an assessment task or a final grade for a subject consistent with the student's right to appropriate and useful feedback on their performance in an assessment task. A student may also seek further explanation for other academic decisions such as Academic Consideration, Supplementary Assessment or Credit for Prior Learning. If a student is not satisfied with the explanation, or have further concerns, they may have grounds for a formal review. For further information refer to https://documents.uow.edu.au/about/policy/students/UOW189967.html

Assessment Quality Cycle

The UOW Assessment Quality Cycle provides a level of assurance that assessment practices across the University are appropriate, consistent and fair. Quality assurance activities are undertaken to support the continuous improvement of assessment and promote good practices in relation to assessment design, marking and review of the subject prior to subsequent delivery.

Academic Integrity

The University's Academic Integrity Policy, faculty handbook and subject guides clearly set out the University's expectation that students submit only their own original work for assessment and avoid plagiarising the work of others or cheating. Re-using any of your own work (either in part or in full) which you have submitted previously for assessment is not permitted without appropriate acknowledgement. Plagiarism can be detected and has led to students being expelled from the University.

The use by students of any website that provides access to essays or other assessment items (sometimes marketed as 'resources'), is extremely unwise. Students who provide an assessment item (or provide access to an assessment item) to others, either directly or indirectly (for example by uploading an assessment item to a website) are considered by the university to be intentionally or recklessly helping other students to cheat. Uploading an assessment task, subject outline or other course materials without express permission of the

University is considered academic misconduct and students place themselves at risk of being expelled from the University.

Students should visit the following University website and become familiar with the University's policy on plagiarism https://www.uow.edu.au/about/policy/UOW058648.html

Referencing

The Author-Date (Harvard) referencing system should, unless otherwise specified for a particular assessment (check Details of Assessment Tasks), be utilised. A summary of the Harvard system can be accessed on the Library website at: http://uow.libguides.com/refcite

Section C: General Advice for Students - Policies and Procedures

Student Services and Support

There are a range of services available to students that are provided free of charge. A good place to get to know services that may be of use to you is the Get Started @ UOW web page, accessed here https://getstarted.uow.edu.au/index.html or search for "Get Started @ UOW". Services available include:

Service	Link to information about the service	
Aboriginal & Torres Strait Islander	https://www.uow.edu.au/wic/about1/index.html?ssSourceSiteId=getstarted	
Careers advice	https://www.uow.edu.au/careers/index.html?ssSourceSiteId=getstarted	
Counselling	https://www.uow.edu.au/student/counselling/index.html?ssSourceSiteId=getstarted	
Student Accessibility and Inclusion (SAI)	https://www.uow.edu.au/student/disability/index.html?ssSourceSiteId=getstarted	
Information Tech.	https://www.uow.edu.au/its/index.html?ssSourceSiteId=getstarted	
Study Skills	$\underline{https://www.uow.edu.au/student/learningcoop/index.html?ssSourceSiteId=\underline{getstarted}}$	

Student Support Coordinator (SSC)

If you have a temporary or ongoing issue or a problem that is affecting your study, including issues that are related to belonging to an equity group, then the Student Support Coordinators may be able to help. There are Student Support Coordinators available to assist students who are studying at all UOW Campuses and in all UOW Faculties. Contact details can be found on the UOW website: https://www.uow.edu.au/student/support-services/coordinators/

Student Advocacy Service

The Student Advocacy Service (SAS) is free, confidential and independent service for all UOW students. The SAS provides advocacy and referral for a range of academic, procedural and administrative issues. For more information visit: https://www.uow.edu.au/student/support-services/advocacy/

Student Central

Student Central is your primary administrative and information contact during your studies. There are service representatives from Student Service, Accommodation Services, BUPA, Global Student Mobility (Exchange) and Scholarships and Sponsorships.

Our purpose is to ensure students have access to the information they need, at the time they need it. We can help with a wide range of enquiries, some are:

- Applying for academic consideration
- Official documentation requests
- Updating personal details
- Student ID card replacement
- Opal cards and transport
- Education verification
- Fees and charges
- Scholarships and grants
- Digital and printed academic documents
- Overseas health cover
- Studying abroad and exchange

- SOLS password and login help
- Student feedback

Student Central contacts:

Phone	1300 275 869 (1300 ASK UOW) or +61 2 4221 3927			
Email	askuow@uow.edu.au			
Online	Enquiry Form (https://bps.uow.edu.au/suite/sites/student-enquiry/page/submit-enquiry			

Library Services

Save yourself time and enhance your studies: connect with information specialists and resources anytime, anywhere.

- For Library support connect with <u>Live Chat</u> or <u>contact the Library</u>.
- For self-help see <u>Frequently Asked Questions</u> or browse <u>Library guides</u> to find information, databases and skills tutorials.
- Research consultations are available to UOW Postgraduate, Honours and Deans Scholar students.

Academic Integrity Policy

Academic integrity involves upholding ethical standards in all aspects of academic work, including learning, teaching and research. It involves acting with the principles of honesty, fairness, trust and responsibility and requires respect for knowledge and its development. The Policy can be found at: http://www.uow.edu.au/about/policy/UOW058648.html

Code of Practice - Research

This Code mandates the current policy and best practice relating to procedures for responsible research. The Code can be found at: http://www.uow.edu.au/about/policy/UOW058663.html

Code of Practice - Honours

This Code sets out the responsibilities of all parties involved in managing students undertaking Honours Programs. The Code can be found at: http://www.uow.edu.au/about/policy/UOW058661.html

The Code of Practice - Work Integrated Learning (Professional Experience)

The Code of Practice - Work Integrated Learning (Professional Experience) sets out what is expected from students, the University and Host Organisations in providing work integrated learning professional experience programs. It applies to professional experience programs that form the whole or part of a subject or course offered at the University. The Code assists in promoting a productive work integrated learning experience for students and in promoting relevant UOW Work Integrated Learning Design Principles. http://www.uow.edu.au/about/policy/UOW058662.html

Copyright Policy

The purpose of this Policy is to outline responsibilities and procedures regarding the use of third party copyright material, with the objectives of reducing staff and UOW exposure to the risks associated with the use of third party copyright material, assisting staff to make full legal use of the materials at their disposal by clearly identifying responsibilities and promoting copyright compliance. The Policy can be found at: http://www.uow.edu.au/about/policy/alphalisting/UOW026670.html

Course Progress Policy

The Course Progress Policy establishes the requirements, definitions and procedures to be used in determining the standards of acceptable course progress. The Policy can be found at: http://www.uow.edu.au/about/policy/UOW058679.html

Examination Rules and Procedures

The UOW rules and procedures outline exam conditions, student conduct in exams, and the procedures for exam management. Further information can found here: https://www.uow.edu.au/student/exams/

Ethical or Religious Objection by Students to the Use of Animal and Animal Products in Coursework Subjects

This policy provides a framework for recognition of and responses to students' ethical or religious objection to animal use in coursework subjects at the University of Wollongong. For the purpose of this policy, animal use includes killing of animals in experimental work, dissection of animals that are already dead, use of animal tissues, use of animal-derived products (such as sera). These uses are relevant to teaching and assessment. Further information about this policy can be found here: http://www.uow.edu.au/about/policy/UOW058708.html

Coursework Rules

The Coursework Rules (hereafter the Rules) govern the admission, enrolment, progression through, and qualification for a coursework award offered by the University. Further information can be found here: https://documents.uow.edu.au/about/policy/UOW262890.html

Human Research Ethics

The Human Research Ethics Committee protects the welfare and rights of the participants in research activities. Further information can be found here: http://www.uow.edu.au/research/ethics/human/index.html

Inclusive Language Guidelines

UOW endorses a policy of non-discriminatory language practice in all academic and administrative activities of the University. Further information is available from: http://www.uow.edu.au/about/policy/alphalisting/UOW140611.html

Intellectual Property Policy

UOW's Intellectual Property Policy provides guidance on the approach taken to Intellectual Property (IP), including its ownership, protection and exploitation. Further information about the management of IP is available at http://www.uow.edu.au/about/policy/UOW058689.html

Review and Appeal of Academic Decisions Policy

UOW aims to provide a transparent and consistent process for resolving a student concern about an academic decision that has affected their academic progress, including a mark or grade. Further information is available at: http://www.uow.edu.au/about/policy/UOW058653.html

Student Academic Consideration Policy

The purpose of the Student Academic Consideration Policy is to enable student requests for academic consideration for assessable components of a subject to be evaluated in a fair, reasonable, timely and consistent manner throughout the University. For information on the Policy, eligibility and how to apply see: https://www.uow.edu.au/student/admin/academic-consideration/

The Student Charter - Your Rights and Responsibilities

The Student Charter is based on principles that guide all members of the University and that promote responsible partnerships within and beyond the University community. http://www.uow.edu.au/student/charter/index.html

Student Assignment of Intellectual Property (IP) Policy

This policy applies to all Students (under-graduate and post-graduate) of the University of Wollongong (UOW). It may also apply to other persons by agreement. This policy sets out the approach taken by UOW in relation to Student assignment of intellectual property. Further information about this policy can be found here: http://www.uow.edu.au/about/policy/UOW058690.html

Student Conduct Rules

These Rules outline the required conduct of students of UOW, and direct staff and students to University Rules, standards, codes, policies, guidelines, procedures and other requirements which specify acceptable and unacceptable student conduct, and the management of alleged student misconduct. http://www.uow.edu.au/about/policy/UOW058723.html

Teaching and Assessment: Assessment and Feedback Policy

The purpose of this Policy is to set out the University of Wollongong's approach to effective learning, teaching and assessment, including the principles and minimum standards underlying teaching and assessment practice. The Policy can be found at: http://www.uow.edu.au/about/policy/alphalisting/UOW222905.html

Teaching and Assessment: Code of Practice - Teaching

This Code is a key document in implementing the University's Teaching and Assessment Policy and sets out the specific responsibilities of parties affected in relation to learning, teaching and assessment, as well as procedures for teaching staff. The Code can be found at: http://www.uow.edu.au/about/policy/UOW058666.html

Teaching and Assessment: Subject Delivery Policy

This Policy sets out specific requirements in relation to the delivery of Subjects. The policy can be found at: http://www.uow.edu.au/about/policy/alphalisting/UOW222906.html

Workplace Health & Safety Policy

The Workplace Health and Safety (WHS) unit at UOW aims to provide structures, system and support to ensure the health, safety and welfare of all at the campus. Further information is available from: https://www.uow.edu.au/about/policy/alphalisting/UOW016894.html