
CHEM101: Chemistry IA: Introductory Physical and General 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 supplementary 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	Ms Emily Luks	+61 2 4239 4349	eluks@uow.edu.au	18.216	Email for an appointment
Coordinator	Dr Giel Muller	+61 2 4239 4149	gmuller@uow.edu.au	18.115	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 Richardson	+61 2 4221 3254	crichard@uow.edu.au	18.114	Email for an appointment
Lecturer	Dr Giel Muller	+61 2 4239 4149	gmuller@uow.edu.au	18.115	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 [Student Conduct Rules](#) and related policies including the [IT Acceptable Use Policy](#) and [Bullying Prevention Policy](#), 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 [Online and Email Etiquette](#) or at <https://www.uow.edu.au/student/learning-co-op/technology-and-software/email-etiquette/>.

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>

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

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Section A: General Information

Learning Outcomes

Subject Learning Outcomes

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

1. Use chemical language, symbols and concepts to describe and apply bonding models to molecular scale systems, analyse macroscale properties of materials on the basis of molecular characteristics, and apply basic thermodynamics, equilibrium and kinetics concepts to chemical and physical change
2. Apply mathematical skills to solve quantitative chemical problems
3. Perform basic chemical laboratory procedures from written instructions safely and demonstrate understanding of chemical principles in the laboratory
4. Record, interpret and effectively communicate results while working in small groups

Subject Description

This subject reinforces and builds on core concepts covered in high school chemistry, providing the basis of further studies in chemistry, medical and health sciences/pre-med, environmental/earth sciences, biological sciences, and STEMM education. You will develop strong connections between the fundamental components of elements and molecules (molecular scale) and observable properties and behaviour of molecules in our everyday lives (macroscale). Concepts include the fundamentals of quantity, mole and stoichiometric calculations, the properties and behaviour of matter on the molecular scale based on electron configuration, periodicity, chemical bonding and molecular shape. Your understanding of matter will be applied to principles of thermodynamics, equilibrium, and kinetics as you interpret and describe chemical and physical change. You will exercise your understanding of chemical principles by carrying out experiments and engaging in essential group discussions in laboratories and workshops.

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

Beginning Laboratory classes:

Upon entering the laboratory during your practical class in Week 2, you will complete the Work Health and Safety (WHS) Induction, which will be immediately followed by the first practical in the same session. You cannot commence laboratory experiments without completing this induction.

You will need to bring with you (and wear) during the entirety of the prac class:

Safety glasses

Lab coat (preferred) or lab apron

Fully enclosed shoes

Major Text(s)

The following text needs to be purchased by students enrolled in this class:

[Brown, LeMay, Bursten, Murphy, Woodward & Stoltzfus, Chemistry: The Central Science in SI Units, Expanded Edition, Global Edition, 15th Edition | Pearson 2022, ISBN: 978-1-292-40876-7.](#)

The subject manual is available for purchase from the UniShop. **You must** bring this to your laboratory and workshop classes. *No digital / pdf versions of this handbook may be disseminated.*

If there is a textbook available for purchase, you can find the details at University Bookshop

<https://unishop.uow.edu.au/>

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	Readings
1	26 Feb 2024	Fundamentals Aligns with Chapters 2-4 (pp 89-218)	Workshop 1 on your own Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) No Lab
2	04 Mar 2024	Matter Molecular Scale: Electronic Structure and Properties Chapters 6 and 7 (pp 274-368)	No Workshop Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) Lab Induction and Lab 1, prework required before entry.
3	11 Mar 2024	Matter Molecular Scale: Chemical Bonding and Shape Chapter 8 (pp 369-411) and sections 9.1 - 9.3 (pp 412-429)	Workshop 2 Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) No Lab Moodle Assignment #1 due Sun Mar 17
4	18 Mar 2024	Matter Molecular Scale: Intermolecular Forces and Modern Bonding Theories Sections 11.1 and 11.2 (pp 517-529) and Chapter 9 (pp 412-471)	No Workshop Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) Lab 2, prework required before entry.
5	25 Mar 2024	Matter Macro Scale: Gases Chapter 10 (pp 472-516)	Workshop 3 Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) No Lab Moodle Assignment #2 due Sun Mar 31 <i>Census date 31 March</i>
6	01 Apr 2024	Matter Macro Scale: Condensed Phases Chapter 11 (pp 517-559)	No Workshop Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) Lab 3, prework required before entry.
7	08 Apr 2024	Matter Macro Scale: Solutions Chapter 13 (pp 613-657)	Workshop 4 Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) No Lab Moodle Unit #3 Assignment due Sun Apr 14
	15 Apr 2024	Mid-Session Recess	
8	22 Apr 2024	Thermodynamics: Enthalpy Chapter 5 (pp 219-273) and 8.8 (pp 400- 404)	No Workshop Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) Mid-semester assessment during lab time and in lab (41.340)
9	29 Apr 2024	Thermodynamics: Entropy Sections 19.1-19.5 (pp 904-932)	Workshop 5 Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) No Lab
10	06 May 2024	Chemical Equilibrium: Kinetics Chapter 14 (pp 658-714)	No Workshop Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) Lab 4, prework required before entry. Moodle Unit #4 Assignment due Sun May 12

11	13 May 2024	Chemical Equilibrium: Kinetics Chapter 14 (pp 658-714) And Chemical Equilibrium: Equilibrium Chapter 15 (pp 715-756)	Workshop 6 Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) No Lab
12	20 May 2024	Chemical Equilibrium Chapter 15 (pp 715-756)	Workshop 7 on your own Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) No Lab
13	27 May 2024	Revision	No Workshop Live Lecture, Q&A: Thu 12:30-13:30 (Room 67.107) No Lab Moodle Unit #5 Assignment due Sun Jun 02
	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

A detailed weekly timetable of the lectures, workshops and practical classes is provided on the Moodle site. Please refer to updated iterations of the timetable as the session progresses. This will take into account any changes due to unforeseen circumstances that may arise during session.

List of Topics Covered

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

Unit 1: Fundamentals. The language of chemistry, symbols, formulae, names of compounds, equations and calculations of amount. At the end of this section you should be able to:

1. Understand simple atomic structure, distinguishing electrons, protons and neutrons and the forms of matter as atoms, ions, molecules.
2. Classify matter as element, compound, mixture and describing the basic characteristics of the states of matter at the macro and the molecular level.
3. Use correct formulae and nomenclature for elements and compounds.
4. Write and balance chemical equations, recognising some basic reaction types as combination, decomposition and combustion reactions.
5. Calculate molar mass, % composition, empirical, molecular formulae, molar and mass quantities.
6. Recognise and balance examples of Acid-Base (AB), dissolution/precipitation (DP) and Redox reactions.
7. Solutions: Carry out quantity, concentration and dilution calculations. Describe the molecular nature of solutions in terms of atoms, ions and molecules; electrolytes and non-electrolytes.
8. Carry out stoichiometric calculations for AB, DP and Redox reaction types, in both, mass and solution stoichiometry, identifying limiting reagents and calculating theoretical and % yield.

Unit 2: Matter on a Molecular Scale. Atoms, ions and molecules. At the end of this section you should be able to:

1. Predict quantum numbers, identify orbitals and describe orbital shape.
2. Predict electron configuration of elements, explain structure of the Periodic Table.
3. Account for patterns of periodicity in atomic properties.
4. Describe ionic and covalent bonding, electronegativity and polar bonding.
5. Develop Lewis structures for bonding, apply VSEPR and predict molecular shape and polarity.
6. Distinguish hybridisation of and bonds; especially with respect to C-C and C=C, C=O, C≡N.
7. Describe intermolecular forces and relate to ionic and polar species.
8. Construct and interpret molecular orbital energy level diagrams for homonuclear diatomic species.

Unit 3: Matter on a Macro Scale. Gases, Liquids, Solutions; Physical equilibria. Recognising links between the macroscale and the molecular scale. At the end of this section you should be able to:

1. Define gas pressure and convert between the different pressure units.
2. Understand and apply the Gas Laws; carry out calculations using $PV = nRT$.
3. Explain the kinetic molecular theory of gases and relate this to $PV = nRT$, effusion, diffusion, Boltzmann-Maxwell distribution, temperature effects.
4. Explain deviations from ideality on a molecular basis.
5. Account for intermolecular forces and relate them to material properties.
6. Describe phases and phase transitions as displayed on simple phase diagrams.
7. Describe viscosity, surface tensions, vapour pressure.
8. Describe solutions, dissolution and apply Henry's Law.
9. Perform calculations for colligative properties.
10. Analyse the molecular scale interactions indicated by physical and colligative properties.

Unit 4: Thermodynamics. How likely reactions are to occur. At the end of this section you should be able to:

1. Give definitions of system, surroundings, work, heat, state functions and internal energy
2. Calculate transfers of heat using heat capacity
3. Define enthalpy and calculate enthalpies associated with both physical change and chemical reactions.
4. Carry out thermochemical calculations with various applications of Hess's Law
5. Understand the concept of entropy, and calculate the reaction entropy from standard entropies
6. Calculate Gibbs Free energy changes for a reaction from enthalpy and entropy data
7. Predict the spontaneity of reactions, taking into account temperature effects.

Unit 5: Kinetics. How fast reactions occur. At the end of this section you should be able to:

1. Define reaction rate, rate of appearance / disappearance, instantaneous and average reaction rate
2. Express reaction rates in terms of each [reactant] or [product] using stoichiometry.
3. Write a rate law expression and define the terms zero, first and second order reaction, used to show rate dependence on concentration.
4. Determine a rate law, order of reaction and the rate constant for a reaction from experimental data.
5. Relate the instantaneous and integrated form of rate laws for zero, first and second order reactions and use integrated rate laws to calculate concentration, time, rate constant and half-life.
6. Recognize that a reaction consists of a set of elementary reactions, one being RDS.
7. Understand the relationship of rate constant, activation energy and temperature shown in the Arrhenius equation. Use the Arrhenius equation for calculations involving rate constants, activation energy, and temperature. Draw a reaction energy profile.
8. Define the term catalyst and identify the impact of a catalyst on a reaction rate in energetic (reaction profile) and molecular terms.

Unit 6: Chemical Equilibrium. How far reactions will proceed. At the end of this section you should be able to:

1. Describe the characteristics of chemical equilibrium.
2. Write equilibrium constants for balanced equations using either concentration or pressure.
3. Perform calculations for equilibrium conditions using equilibrium tables (ICE table).
4. Apply Le Chatelier's principle to predict reaction direction using reaction quotient.

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.

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	Report	20%
Assessment 2	Quiz	10%
Assessment 3	Quiz	10%
Assessment 4	Quiz	20%
Assessment 5	Exam	40%
	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 [UOW Key Dates](#).

Assessment 1: Report - Laboratory Reports (4)

Marking Criteria	Quality of the student's laboratory report - detail of observations, balanced equations, data recorded to the correct number of decimal places, calculations including units and correct significant figures, and understanding of concepts covered/associated with the practical.
Length	See Subject Handbook for laboratory template pages; questions sheet is approx. 2 pages.
Weighting	20%
Assessment Due	To Be Announced
Type of Collaboration	Individual assessment
Style and format	Laboratory Report consists of data, graphs and calculations from the experiments, recorded on your lab template pages; as well as an open-book, individually answered, short-answer question sheet based on the lab class.
Assessment submission	Hard copy of Lab Template pages and Lab Questions sheet to be submitted to your demonstrator at the end of your allocated lab class in weeks 2, 4, 6 and 10.
Assessment return	During the next laboratory class, otherwise at an upcoming Workshop class. Marks will be available on the Moodle Grade site.
Detailed information	Lab instructions are available in the Subject Handbook. Preparation for the short-answer questions includes reading the practical instructions prior to the class, completion of the prelab, and completion of the lab and its associated template pages. Failure to complete the prelab BEFORE arrival to the lab may result in a deduction of marks (up to 10%). Students are expected to attend ALL laboratory classes and absences will impact your ability to accomplish the learning outcomes of this course. Exemption/consideration for missing a lab class may only be applied in special circumstances at the discretion of the Subject Coordinator(s). Maximum of one exemption to be granted per student. <i>All unexcused absences or missed assignments are awarded marks of "0". Note that, regardless of circumstance, at least 3 labs need to be submitted to avoid a TF fail mark for the class.</i>

	If you are unable to make your laboratory class (with valid reason) but could make an alternate time that week, please email CHEM101-admin@uow.edu.au to arrange a lab swap.
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Assessment 2: Quiz - Workshop Quizzes

Marking Criteria	Selection of correct answer for multiple choice questions.
Length	1-10 multiple choice questions.
Weighting	10%
Assessment Due	11 Mar 2024 (In workshop in Session Week 3) 25 Mar 2024 (In workshop in Session Week 5) 08 Apr 2024 (In workshop in Session Week 7) 29 Apr 2024 (In workshop in Session Week 9) 13 May 2024 (In workshop in Session Week 11)
Type of Collaboration	Individual assessment
Style and format	Multiple choice question sheet completed On-campus (except in Week 5 due to Easter public holiday).
Assessment submission	Hard copy to be submitted to your tutor at the end of the workshop (except in Week 5 due to Easter public holiday).
Assessment return	Marks will be available via SOLS the week after workshop completion. Question sheets will not be returned to students, but feedback may be requested from the Subject Coordinator.
Detailed information	<p>Quiz must be completed in person during your workshop class.</p> <p>Note: In Week 5, Workshop 3 will be a compulsory Online workshop due to the Easter public holiday. This workshop will have an online Moodle assessment instead of the in-person on-campus quiz.</p> <p>Part A pre-workshop activity must be completed BEFORE arriving at your workshop class, including completion of notes in your Subject Handbook and answering the "study questions" on Moodle. Failure to complete the pre-workshop may result in loss of marks from your quiz.</p> <p>Exemption/consideration of missed workshop may only be applied in special circumstances at the discretion of the subject coordinator(s) and through evaluation of Academic Consideration (AC) applications. Maximum of one exemption to be granted per student with approved AC. All other absences are awarded marks of "0".</p> <p>If you are unable to make your workshop class (with valid reason) but could make an alternate time that week, please email CHEM101-admin@uow.edu.au to notify us.</p>

Assessment 3: Quiz - Online Moodle Assignments (5)

Marking Criteria	Selection of correct auto-marked answer.
Length	10-15 online questions (equivalent of 1-2 written pages).
Weighting	10%
Assessment Due	17 Mar 2024 (Sunday in Session Week 3) 31 Mar 2024 (Sunday in Session Week 5) 14 Apr 2024 (Sunday in Session Week 7) 12 May 2024 (Sunday in Session Week 10) 02 Jun 2024 (Sunday in Session Week 13)
Type of Collaboration	Individual assessment
Style and format	Online Moodle quiz with multiple choice and calculation questions; 2 attempts permitted.
Assessment submission	Online via Moodle.

Assessment return	Marks automatically provided upon submission.
Detailed information	Quizzes remain open for 2-3 weeks prior to the due date and automatically close at 10:00pm on the specified due date. The highest score of 2 attempts is recorded. As these quizzes remain open for an extended period of time, no extensions will be given.

Assessment 4: Quiz - Mid-Semester Quiz

Marking Criteria	Multiple-choice and short-answer questions: correct answers, logically set out calculations including units and concise explanations which address the question.
Length	Equivalent to approx. 4 written pages.
Weighting	20%
Assessment Due	To Be Announced
Type of Collaboration	Individual assessment
Style and format	A combination of both multiple choice and short answer questions covering material from lectures, labs and workshops up to and including Week 7. In-person in the First Year Labs during your Week 8 allocated lab time .
Assessment submission	Hard copy submitted during your Week 8 lab class.
Assessment return	Within 2 weeks, likely during your Lab 4 class in Week 10.
Detailed information	Quiz includes a series of MCQ's and short answer questions on topics covered so far (Weeks 1-7 inclusive) and assumed HSC material. You MUST bring a calculator and your student ID. **In the event of an unforeseen circumstance, an AC application for rescheduling must be submitted within 24 hours of your mid-semester assessment time slot. You may be requested to sit the quiz during another laboratory class through the week.

Assessment 5: Exam - Final Exam

Marking Criteria	Correctness of final answers. Logical calculations or explanations provided. Units provided where required.
Length	3hr
Weighting	40%
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	On-campus, supervised exam with both multiple-choice and short-answer questions.
Detailed information	Final exam will include theory and calculation questions, assessing the material covered in <u>ALL</u> weeks (1-13 inclusive). Example questions and answers will be available before the exam. On-campus, in-person exam to be scheduled nearer to the date and communicated via SOLS. Allowed materials and resources to be outlined by subject coordinator at least 2 weeks prior to the final exam. UOW approved calculators only. Cell phones and other internet-compatible devices are not allowed.

Minimum Requirements to Pass this Subject

To receive a clear pass in this subject, you must achieve:

- a total mark of 50% or more; and
- an average lab mark of at least 50% with a **minimum of 3** lab experiments carried out and submitted.

Failure to meet **both** these requirements is grounds for awarding a Technical Fail (TF) or Fail (F) in the subject, even where total marks accumulated are greater than 50%.

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

Learning Outcomes	Measures - Assessment weighting				
	Laboratory Reports (4)	Workshop Quizzes	Online Moodle Assignments (5)	Mid-Semester Quiz	Final Exam
	(20%)	(10%)	(10%)	(20%)	(40%)
Use chemical language, symbols and concepts to describe and apply bonding models to molecular scale systems, analyse macroscale properties of materials on the basis of molecular characteristics, and apply basic thermodynamics, equilibrium and kinetics concepts to chemical and physical change	✓	✓	✓	✓	✓
Apply mathematical skills to solve quantitative chemical problems	✓	✓	✓	✓	✓
Perform basic chemical laboratory procedures from written instructions safely and demonstrate understanding of chemical principles in the laboratory	✓				
Record, interpret and effectively communicate results while working in small groups	✓	✓			

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	https://www.uow.edu.au/student/learningcoop/index.html?ssSourceSiteId=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 [Live Chat](#) or [contact the Library](#).
- For self-help see [Frequently Asked Questions](#) or browse [Library guides](#) 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>