



# CHEM1001

## Foundations of Chemical and Biomolecular Sciences 1

Session 2, Infrequent attendance, North Ryde 2021

*Archive (Pre-2022) - Department of Molecular Sciences*

### Contents

---

<a href="#"><u>General Information</u></a>	3
<a href="#"><u>Learning Outcomes</u></a>	4
<a href="#"><u>General Assessment Information</u></a>	4
<a href="#"><u>Assessment Tasks</u></a>	7
<a href="#"><u>Delivery and Resources</u></a>	11
<a href="#"><u>Unit Schedule</u></a>	12
<a href="#"><u>Policies and Procedures</u></a>	12

#### **Disclaimer**

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

#### **Session 2 Learning and Teaching Update**

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of [units with mandatory on-campus classes/teaching activities](#).

Visit the [MQ COVID-19 information page](#) for more detail.

## General Information

Unit convenor and teaching staff

Convenor and Lecturer

Fei Liu

[fei.liu@mq.edu.au](mailto:fei.liu@mq.edu.au)

Contact via [Contact via fei.liu@mq.edu.au](mailto:fei.liu@mq.edu.au)

By Appointment

Convenor and Lecturer

Ian Jamie

[ian.jamie@mq.edu.au](mailto:ian.jamie@mq.edu.au)

Contact via [Contact via ian.jamie@mq.edu](mailto:ian.jamie@mq.edu)

By Appointment

Lecturer

Andrew Piggott

[andrew.piggott@mq.edu.au](mailto:andrew.piggott@mq.edu.au)

Contact via [Contact via andrew.piggott@mq.edu.au](mailto:andrew.piggott@mq.edu.au)

By Appointment

Credit points

10

Prerequisites

Corequisites

Co-badged status

### Unit description

Foundations of Chemical and Biomolecular Sciences 1 introduces students to the principles and practical aspects of the molecular sciences, from the smallest of chemical substances through to the molecules of life - the biomolecules. This unit does not assume prior knowledge of chemistry or biology and is ideal for any student that wants to understand the atomic and molecular world within and around them. It will commence with the language of chemistry by introducing atoms and molecules and elements and compounds and using representative inorganic and organic compounds, including biomolecules, to show how their structures, functions and reactions are described. It will build on this language to allow prediction of the reactivity, behaviour and function of different classes of compounds, with a focus on acids and bases and organic compounds including biomolecules. Contemporary applications will be highlighted to show the role of chemical and biomolecular sciences in our lives, now and in the future, including in helping to achieve a sustainable environment, understanding health and disease, and advancing new molecular technologies. Practical sessions and tutorials will reinforce learning throughout this unit.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

**ULO1:** Use the language and principles of chemical science to explore the composition and properties of matter and discuss how molecular sciences are important in our lives.

**ULO2:** Name and write (or describe) the chemical structures for representative inorganic and organic compounds, including peptides, carbohydrates and nucleic acids.

**ULO3:** Analyse the chemical structure of chemical compounds to predict their function, reactivity and physical properties.

**ULO4:** Calculate the physical quantities that characterize chemical composition, including solids and solutions, as well as chemical reactions.

**ULO5:** Demonstrate laboratory skills used for the preparation, separation and analysis of chemical compounds, including an understanding of general laboratory safety procedures.

**ULO6:** Record and analyse scientific data, as well as communicate conclusions using the basic elements of scientific report preparation.

## General Assessment Information

### Attendance at practical and tutorial (SGTA) classes--these are hurdle requirements:

- You must attend and participate in all practical classes to pass the unit (at least three out of four practical classes with approved special consideration due to unavoidable disruptions).
- You must attend and participate in all weekly tutorial (SGTA) classes to pass the unit (at least ten out of twelve tutorial/SGTA classes with approved special consideration due to unavoidable disruptions). The details of how to register for these weekly tutorial (SGTA) classes will be on the unit's iLearn web site. Please note that participation in the SGTA sessions given on the university's timetable on site are optional (not compulsory and not contributing to your mark), and your registration into these will require confirmation in the first two weeks of the semester (details on iLearn).
- Please note that if you miss a practical class or tutorial class, **we are not required to offer you a make-up class. Only with a special consideration approval and laboratory availability will we consider a make-up request.**

### Tutorial/SGTA Quizzes (20%):

During the weekly tutorials (also called SGTA sessions) you will be required to join Mastering Chemistry (see the unit iLearn site for details) and complete a set number of questions, which will be based on the lecture material, text book and practice question sets available on iLearn. Your final tutorial/SGTA quiz mark will be the average of 10 best individual quiz marks out of 12 possible ones. In addition, you may be assigned further work to complete if the outcome of your tutorial/SGTA assessment is not satisfactory. This will be done automatically via Mastering Chemistry using a method called Adaptive Learning (details on iLearn). Please also note that **while the Tutorial/SGTA participation is a hurdle (you must engage with the activity)**, this participation hurdle is not part of the 20%. Only your performance on the weekly Mastering Chemistry tutorial/SGTA quizzes will contribute to this 20%, and given this quiz performance is not a hurdle, there will not be other chances to re-attempt if you fail.

### Practical class exercises (20%):

Four practical classes worth 5% each. The pre-practical quizzes (online, 30%), performance in the practical (10%), the practical report (submitted at the end of the practical; 40%), and the post-practical exercises (online, 20%) will be used to calculate the final mark for each practical class. Please also note that while the practical participation is a hurdle, your performance on the practical class exercises is not a hurdle. As such there will not be other chances to re-attempt if you fail these exercises.

### Mid-session test (20%)-hurdle requirement:

- The 1hr mid-session test will be held online (open book) in week 7 (on Saturday Sept 11<sup>th</sup>), as this will allow failing students to withdraw without academic penalty. Note that the **last day to withdraw without academic penalty is in week 8, 28 September 2021**.
- Because the mid-semester test is a hurdle assessment, you will need to get  $\geq 40\%$  to meet the hurdle. In the event that you make a serious first attempt at the mid-semester test, you will be provided with one more opportunity to sit a new test in the mid-semester break (to be determined) to meet the hurdle. If you miss the second opportunity without a special consideration approval you will have failed this hurdle and thus this unit. The faculty defines a serious attempt as a mark of 10% below the hurdle, which in this instance is a mark between  $\geq 30-40\%$ . You will NOT be given a second attempt to pass the mid-semester test if you get below 30% in your first attempt.
- Students that are unable to sit the test in week 7 will require a special consideration approval from ask.mq.edu to be able to sit the test as soon as possible.

#### **Final Exam (40%):**

The final examination will be a two-hour written examination (plus ten minutes' reading time), consisting of multiple choice and long answer questions. The final examination will cover all sections of the unit (lectures, lab practicals, workshops and assignments) and is designed to address specific understanding of all the concepts presented within the course.

The final exam is **NOT** a hurdle assessment. You will **NOT** be given a second attempt to pass the final exam regardless of the score on your first attempt. **Information on Supplementary exams:**

- If you receive a special consideration due to unavoidable disruption for the final exam, a supplementary exam will be scheduled in the interval between the regular exam period and the start of the next session. By making a special consideration for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure that you are familiar with the policy prior to submitting an application.

Your marks will be displayed on iLearn. It is your responsibility to regularly verify that the records displayed at iLearn (Tools->Grades) are correct.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Practical Participation</a>	0%	Yes	Check timetable; week 4, mid-semester break, week 10
<a href="#">Tutorial Participation</a>	0%	Yes	Weekly
<a href="#">In-Session Test</a>	20%	Yes	Week 7; Sept 11th
<a href="#">Final Examination</a>	40%	No	University examination period
<a href="#">Practical Class Exercises</a>	20%	No	Weeks 4-5, mid-semester break, weeks 10-11
<a href="#">Tutorial Quizzes</a>	20%	No	Weekly

### Practical Participation

Assessment Type <sup>1</sup>: Participatory task

Indicative Time on Task <sup>2</sup>: 0 hours

Due: **Check timetable; week 4, mid-semester break, week 10**

Weighting: **0%**

**This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)**

You must attend and participate in all practical classes. Rescheduling may be possible for missed classes.

On successful completion you will be able to:

- Use the language and principles of chemical science to explore the composition and properties of matter and discuss how molecular sciences are important in our lives.
- Name and write (or describe) the chemical structures for representative inorganic and organic compounds, including peptides, carbohydrates and nucleic acids.
- Analyse the chemical structure of chemical compounds to predict their function, reactivity and physical properties.
- Calculate the physical quantities that characterize chemical composition, including solids and solutions, as well as chemical reactions.
- Demonstrate laboratory skills used for the preparation, separation and analysis of

chemical compounds, including an understanding of general laboratory safety procedures.

- Record and analyse scientific data, as well as communicate conclusions using the basic elements of scientific report preparation.

## Tutorial Participation

Assessment Type <sup>1</sup>: Participatory task

Indicative Time on Task <sup>2</sup>: 0 hours

Due: **Weekly**

Weighting: **0%**

**This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)**

You must attend and participate in a weekly tutorial class.

On successful completion you will be able to:

- Use the language and principles of chemical science to explore the composition and properties of matter and discuss how molecular sciences are important in our lives.
- Name and write (or describe) the chemical structures for representative inorganic and organic compounds, including peptides, carbohydrates and nucleic acids.
- Analyse the chemical structure of chemical compounds to predict their function, reactivity and physical properties.
- Calculate the physical quantities that characterize chemical composition, including solids and solutions, as well as chemical reactions.

## In-Session Test

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 10 hours

Due: **Week 7; Sept 11th**

Weighting: **20%**

**This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)**

There will be an in-session test that will be designed to give you specific feedback on your understanding of the topics up to this stage of the unit.

On successful completion you will be able to:

- Use the language and principles of chemical science to explore the composition and properties of matter and discuss how molecular sciences are important in our lives.
- Name and write (or describe) the chemical structures for representative inorganic and organic compounds, including peptides, carbohydrates and nucleic acids.
- Analyse the chemical structure of chemical compounds to predict their function, reactivity and physical properties.
- Calculate the physical quantities that characterize chemical composition, including solids and solutions, as well as chemical reactions.

## Final Examination

Assessment Type <sup>1</sup>: Examination

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **University examination period**

Weighting: **40%**

The final exam will be designed to address specific understanding of all topics presented within the course and to show that the knowledge obtained can be applied to new problems.

On successful completion you will be able to:

- Use the language and principles of chemical science to explore the composition and properties of matter and discuss how molecular sciences are important in our lives.
- Name and write (or describe) the chemical structures for representative inorganic and organic compounds, including peptides, carbohydrates and nucleic acids.
- Analyse the chemical structure of chemical compounds to predict their function, reactivity and physical properties.
- Calculate the physical quantities that characterize chemical composition, including solids and solutions, as well as chemical reactions.

## Practical Class Exercises

Assessment Type <sup>1</sup>: Lab report

Indicative Time on Task <sup>2</sup>: 12 hours

Due: **Weeks 4-5, mid-semester break, weeks 10-11**

Weighting: **20%**

Practical classes are designed to develop laboratory skills and scientific data analysis capabilities. The pre-practical, practical and post-practical exercises will be used to calculate the final mark for each practical class.

On successful completion you will be able to:

- Calculate the physical quantities that characterize chemical composition, including solids and solutions, as well as chemical reactions.
- Demonstrate laboratory skills used for the preparation, separation and analysis of chemical compounds, including an understanding of general laboratory safety procedures.
- Record and analyse scientific data, as well as communicate conclusions using the basic elements of scientific report preparation.

## Tutorial Quizzes

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 12 hours

Due: **Weekly**

Weighting: **20%**

Weekly quizzes based on the tutorial question sets available at iLearn.

On successful completion you will be able to:

- Use the language and principles of chemical science to explore the composition and properties of matter and discuss how molecular sciences are important in our lives.
- Name and write (or describe) the chemical structures for representative inorganic and organic compounds, including peptides, carbohydrates and nucleic acids.
- Analyse the chemical structure of chemical compounds to predict their function, reactivity and physical properties.
- Calculate the physical quantities that characterize chemical composition, including solids and solutions, as well as chemical reactions.

---

<sup>1</sup> If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment

- the [Writing Centre](#) for academic skills support.

<sup>2</sup> Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

## Delivery and Resources

### 1. Communication

During the semester, the CHEM1001 iLearn site will be used to communicate important information to you. In addition, email will be sent to your student email account. Please check your messages frequently.

We cannot overstate the importance of regularly checking your email and the CHEM1001 iLearn site.

### 2. Classes

See <https://timetables.mq.edu.au/2021> for class times and locations.

- Lectures: Lecture material will be pre-recorded and made available as videos PRIOR to the lecture time. Links can be found on the iLearn site.
- Tutorials: Tutorials will be held via Zoom. Links can be found on the iLearn site. During tutorials, we will use Mastering Chemistry, the web-based learning system that accompanies the textbook (Chemistry: The Central Science). The problems assigned for that week's tutorial will be undertaken during the class. For that reason, you must bring a device that can be used to give you access to the Mastering Chemistry site.
- Practicals: The practical classes for CHEM1001 are run in 14SCO 320 and 14SCO 308 (note that these rooms are connected).

3. Safety rules. It is very important that you understand that you will not be allowed to attend the laboratory if you do not have a laboratory coat ("lab coat") and enclosed, sturdy footwear (e.g. ugg boots are not acceptable). **For health reasons the Department does not provide lab coats or footwear.** Safety glasses and disposable gloves are supplied. You are required to undertake prelaboratory exercises (prelabs) before coming to the session, to help you prepare for the lab. During the lab you will be assessed on general behaviour and competence, as well as the quality of your results. You are to submit a report ("lab report") that summaries the outcomes of your investigation. There are post-laboratory exercises to be completed within a week of the lab session ("post-labs").

4. Teaching and learning strategies; textbooks; and other resources: please visit the unit's iLearn webpage for details.

## Unit Schedule

Please visit the unit's iLearn webpage for details.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](https://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.