



CHEM1002

Foundations of Chemical and Biomolecular Sciences 2

Session 2, Special circumstances, North Ryde 2021

Archive (Pre-2022) - Department of Molecular Sciences

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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

Robert Willows

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Alf Garcia-Bennett

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Credit points

10

Prerequisites

CHEM1001 or CBMS107 or CBMS103 or HSC Chemistry Band 5 and above

Corequisites

Co-badged status

Unit description

Molecular sciences is the basis for the development of new medicines, new materials, new ways of monitoring and improving our environment, and many other fields. This unit will focus on the properties and reactivity of matter and is an ideal unit for any student that wants to understand the atomic and molecular world within and around them. It will introduce chemical and physical properties of solids, liquids and gases, metals and solutions. It will examine specific reactions including precipitation, acid base chemistry and oxidation/reduction processes and will explore the energetics and rates of chemical change. It will also describe methods of detection and analysis of matter. Specific biological, environmental and new materials related to real world examples will be provided, with topics such as global warming, energy production and renewable fuels. This unit will provide an understanding and appreciation of 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: Explain the chemical and physical properties of solids, liquids and gases, metals and solutions.

ULO2: Predict reactions of matter including precipitation, acid base chemistry, oxidation/reduction processes, and the energetics and rates of chemical change.

ULO3: Utilise chemistry and biomolecular sciences concepts covered in this unit to process and interpret relevant chemical data.

ULO4: Undertake laboratory investigations requiring basic laboratory skills related to the reactions of matter and the energetics and rates of reaction, and their detection and analysis, and demonstrate an awareness of general laboratory safety procedures.

ULO5: Record and analyse scientific data, as well as judge its reliability and significance and interpret and communicate conclusions, including using the basic elements of scientific report preparation.

ULO6: Discuss the central role and impact of the chemical and biomolecular sciences concepts covered in this unit in our lives and its modern applications.

General Assessment Information

PARTICIPATION in tutorials, quizzes, mid-term exam, practicals:

- **If you are unable to attend a practical class, exam, or hand in a form of assessment due to illness or misadventure, you must submit a request for special consideration** no later than five (5) working days after the assessment task date or due date. Information for Special consideration can be found here: <https://students.mq.edu.au/study/my-study-program/special-consideration>
- **You should also immediately contact the Unit Convenor, Professor Robert Willows (robert.willows@mq.edu.au).**
- You may only attend the practical classes for which you are enrolled, as shown in your eStudent timetable.

Final grade:

- Your final grade will be based on the mark from the aggregation of the individual assessments (in-class and online quizzes, mid-semester test, practical). **NOTE** the final examination is a hurdle and you must obtain a grade of **40% or greater** in the final examination to be awarded an overall Pass grade or better. **If you get between 30-40% in the final examination you will get a SECOND attempt at the exam but ONLY if you can pass the unit with a grade of 40% in the final exam. The SECOND attempt is to demonstrate that you have obtained a minimum level of understanding to**

pass the unit NOT TO IMPROVE YOUR MARK. If you are given a second attempt then your MAXIMUM MARK FOR THE EXAMINATION IN THE SECOND ATTEMPT will be 40%. It is university policy that you cannot improve your mark more than the hurdle boundary mark (40% in this instance) if you are given a SECOND attempt.

ONLINE QUIZZES

Due: 10 Weekly online quizzes from **Weeks 2-12** (*Check iLearn as any weeks without a tutorial do not have a quiz*). Weighting: **15%**

There will be 10 on-line quizzes. You will find that these quizzes assist you in revising the course material as the course progresses. Further specific details on the quizzes will be provided at the CHEM1002 iLearn site.

PRACTICALS

Due: **To be submitted at the conclusion of every practical** Weighting: **20%**

The pre-practical exercises, performance in the practical, the practical report, and the post-practical exercises will be used to calculate the final practical mark. The assessment tasks start off simple and build on skills and knowledge developed throughout the course.

Pre-practicals exercises for practicals 1, 3, 4 and 5 must be handed in online on iLearn **prior** to your scheduled practical class. See iLearn for dates for online submission prior to the practical class.

Attendance: **If you are unable to attend a practical class, exam, or hand in a form of assessment due to illness or misadventure, you must submit a Disruption to Studies notification at ask.mq.edu.au no later than five (5) working days after the assessment task date or due date. You should also immediately contact the Unit Convenor, Professor Robert Willows (robert.willows@mq.edu.au).**

MID SEMESTER TEST

Due: **Week 7 DURING THE SECOND LECTURE.** Weighting: **15%**

Covering lectures up to and including week 6 content. This is designed to give you specific feedback on your understanding of the topics up to this stage to assist you in your further study of the unit. See iLearn for location and details.

FINAL EXAMINATION

Due: **University Examination Period** Weighting: **50%**

The final exam is designed to address specific understanding of all the topics presented within the course and to show that the knowledge obtained can be applied to new problems. Details of the final exam length will be made available as part of the publishing of the university exam timetable.

The final exam is a hurdle assessment and you will need to get $\geq 40\%$ in the final exam to meet the hurdle. In the event that you make a **serious first attempt at the final exam**, you will be provided with an opportunity to sit a new final exam to meet the hurdle. The faculty define a serious attempt as a mark of 10% below the hurdle which in this instance is a mark between 30-40%. **You will NOT be given a second attempt to pass the exam if you get below 30% in your first attempt. Also, note that it is university policy that second attempts at the hurdle are your chance to achieve the hurdle NOT a chance to try and improve your grade. If you meet the hurdle by getting above 40% in your second attempt at the exam you will be given the hurdle boundary of 40% for the exam.**

Final Examination Details: The examination timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in final form approximately four weeks before the commencement of the examinations. You are expected to present yourself for examination at the time and place designated by the University in the Examination Timetable. This could be any day after the final week of semester and up until the final day of the official examination period. It is Macquarie University policy to **not set early examinations** for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is, the final day of the official examination period. **NOTE: If you apply for a supplementary examination, you must make yourself available in the two weeks following the regular exam period. If you are not available at that time, there is no guarantee an additional examination time will be offered. Specific examination dates and times will be determined at a later date.**

The only exception to sitting an examination at the designated time is because of documented illness or unavoidable disruption. Absence from the final exam will result in a grade of F except in the case of a genuine medical emergency or misadventure as defined by the University (see below). In these circumstances you should apply for a Supplementary Exam at ask.mq.edu.au.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Final Examination</u>	50%	Yes	During exam period TBA
<u>Special Circumstances Midsemester Test</u>	15%	No	Week 7 lecture 2
<u>Practical and Tutorial participation</u>	0%	Yes	Each session
<u>Laboratory work</u>	20%	No	Week of lab session (see iLearn)
<u>Online Quizzes</u>	15%	No	Sunday after SGTA (see iLearn)

Final Examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 25 hours

Due: **During exam period TBA**

Weighting: **50%**

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

It is designed to address specific understanding of all the topics presented within the unit and to show that the knowledge obtained can be applied to new problems.

On successful completion you will be able to:

- Explain the chemical and physical properties of solids, liquids and gases, metals and solutions.
- Predict reactions of matter including precipitation, acid base chemistry, oxidation/reduction processes, and the energetics and rates of chemical change.
- Utilise chemistry and biomolecular sciences concepts covered in this unit to process and interpret relevant chemical data.
- Discuss the central role and impact of the chemical and biomolecular sciences concepts covered in this unit in our lives and its modern applications.

Special Circumstances Midsemester Test

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 6 hours

Due: **Week 7 lecture 2**

Weighting: **15%**

It is designed to address specific understanding of all the topics presented within the unit and to show that the knowledge obtained can be applied to new problems.

On successful completion you will be able to:

- Explain the chemical and physical properties of solids, liquids and gases, metals and solutions.
- Predict reactions of matter including precipitation, acid base chemistry, oxidation/

reduction processes, and the energetics and rates of chemical change.

- Utilise chemistry and biomolecular sciences concepts covered in this unit to process and interpret relevant chemical data.

Practical and Tutorial participation

Assessment Type ¹: Participatory task

Indicative Time on Task ²: 0 hours

Due: **Each session**

Weighting: **0%**

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

You must participate in minimum of 8 tutorial classes and 4 of 5 practical classes. This is a hurdle requirement.

On successful completion you will be able to:

- Explain the chemical and physical properties of solids, liquids and gases, metals and solutions.
- Predict reactions of matter including precipitation, acid base chemistry, oxidation/reduction processes, and the energetics and rates of chemical change.
- Utilise chemistry and biomolecular sciences concepts covered in this unit to process and interpret relevant chemical data.
- Undertake laboratory investigations requiring basic laboratory skills related to the reactions of matter and the energetics and rates of reaction, and their detection and analysis, and demonstrate an awareness of general laboratory safety procedures.
- Record and analyse scientific data, as well as judge its reliability and significance and interpret and communicate conclusions, including using the basic elements of scientific report preparation.
- Discuss the central role and impact of the chemical and biomolecular sciences concepts covered in this unit in our lives and its modern applications.

Laboratory work

Assessment Type ¹: Lab report

Indicative Time on Task ²: 15 hours

Due: **Week of lab session (see iLearn)**

Weighting: **20%**

The pre-practical exercises, performance in the practical, the practical report, and the post-practical exercises will be used to calculate the final practical mark. The assessment tasks start off simple and build on skills and knowledge developed throughout the course.

On successful completion you will be able to:

- Predict reactions of matter including precipitation, acid base chemistry, oxidation/reduction processes, and the energetics and rates of chemical change.
- Utilise chemistry and biomolecular sciences concepts covered in this unit to process and interpret relevant chemical data.
- Undertake laboratory investigations requiring basic laboratory skills related to the reactions of matter and the energetics and rates of reaction, and their detection and analysis, and demonstrate an awareness of general laboratory safety procedures.
- Record and analyse scientific data, as well as judge its reliability and significance and interpret and communicate conclusions, including using the basic elements of scientific report preparation.

Online Quizzes

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 13 hours

Due: **Sunday after SGTA (see iLearn)**

Weighting: **15%**

There will be 10 on-line quizzes during semester. You will find that these quizzes assist you in revising the course material as the course progresses.

On successful completion you will be able to:

- Explain the chemical and physical properties of solids, liquids and gases, metals and solutions.
- Predict reactions of matter including precipitation, acid base chemistry, oxidation/reduction processes, and the energetics and rates of chemical change.
- Utilise chemistry and biomolecular sciences concepts covered in this unit to process and interpret relevant chemical data.
- Discuss the central role and impact of the chemical and biomolecular sciences concepts covered in this unit in our lives and its modern applications.

¹ 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.

² 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

Total hours expected across the semester: 150 hr of student learning is expected for a 10cp unit delivered at Macquarie University. This 150 hr of student learning is mandated by the federal governments tertiary education qualities and standards agency, TEQSA. For CHEM1002 these hours include: all scheduled classes (55 hours), as well as laboratory preparation (~15 hours, 3hr per lab), preparation for SGTAs (~20 hours, 2hr per SGTA), study for quizzes (~13 hr), study for mid semester test (~7 hr) and other study (~40 hr).

Lectures start in WEEK 1: Lectures will be presented formally. Some lecture material will be available on iLearn: <http://ilearn.mq.edu.au>, while other material will be provided in the lecture class. You are strongly encouraged to review the lecture material beforehand, so you can spend most of your time engaging with the lecture and ask questions in the class if you have them. There are two one-hour lectures per week during semester, except for the mid-semester test in the second lecture in week 7 and except when a scheduled lecture falls on a public holiday.

Laboratory Classes start in WEEK 3: Practical classes are designed for you to develop basic laboratory, safety, and critical and analytical analysis skills. There will be 5 four-hour lab practicals on-campus. Laboratory notes will be available on iLearn for download, you must bring a PRINTED copy with you to your laboratory class and are expected to have read through all of the planned activities and COMPLETED the PRE-LAB exercises before attending the class. Please also bring a laboratory coat and safety glasses to your lab session.

Tutorials/Small Group Teaching Activity (SGTA) Classes start in WEEK 2: These classes are designed to introduce students to a range of problem-solving skills and mainly consist of material related to lecture topics, using a series of activities, problems, or questions. There will be 10 one-hour SGTAs. It is expected that you will have gone through the lectures for that topic and attempted the problems that are available on iLearn for the SGTA/Tutorial. You are expected to have spent ~3 hours.

Online Quizzes start in WEEK 2: There will 10 online quizzes corresponding to the Tutorial/SGTA sessions starting in week 2. These quizzes are short 15-25 minute multiple choice quizzes. Each quiz can be completed at any time between Thursday and Sunday. They are time limited and you must complete the quiz once you start.

Required and Recommended Texts and/or Materials:

Prescribed text:

- Chemistry: The Central Science, 3rd Edition, By Theodore L. Brown, H. Eugene LeMay,

Bruce E. Bursten, Catherine Murphy, Patrick Woodward, Steven Langford, Dalius Sagatys, Adrian George (<https://www.pearson.com.au/9781442554603>)

- Mastering Chemistry is strongly aligned to this textbook. See iLearn for details.

Other required Materials:

- Laboratory coats. Available from Mac Shop. 18 Wally's Walk, Macquarie University . <http://shop.mq.edu.au>
- Safety glasses: available from multiple places including, Bunnings, Officeworks and/or BigW

Technology Used and Required iLearn: You are expected to access the unit iLearn site on a frequent basis and download PDF files provided. You are strongly encouraged to make use of the discussion forum available on the unit iLearn site for general discussion of the materials presented in this unit. General use computers are provided by the University, but it would be advantageous to have your own computer and internet access. Microsoft Office is available free of charge to Macquarie University students. It is important that you have a scientific calculator as hand-held calculators will be used in practicals, SGTAs, tests, and in the final examination. Note that text retrieval calculators are not allowed in the final examination. Items of interest and links to other online material will be placed on the unit iLearn website.

Unit Schedule

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

Lectures begin on Monday 26th July 2021 and will be held weekly as per the timetable in the link above. Summary of times and locations:

Day	Time	Location
Monday	9-10 pm	Online
Wednesday	4-5 pm	Online

Laboratory practicals start the third week of the semester. Scheduled classes below. Additional classes may be added.

Weeks	Day	Time	Location
3, 5, 7, 10, 12	Tuesday	9-1 pm	14 Sir Christopher Ondaatje Ave - 308 Science Lab
3, 5, 7, 10, 12	Tuesday	2-6 pm	14 Sir Christopher Ondaatje Ave - 308 Science Lab
3, 5, 7, 10, 12	Wednesday	9-1 pm	14 Sir Christopher Ondaatje Ave - 308 Science Lab

Students will need to register for **one of these** sessions only.

SGTA/Tutorial classes start the second week of the semester and will be held in semester weeks as below. NOTE. No tutorial in week 9.

Weeks	Time	Location
2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13	Various times	Various locations

NOTE: NO SGTA IN WEEK 9.

Students will need to register for **one** session only. Participation required and is a hurdle. You must participate in a minimum of 8 of the SGTAs and 4 of the practical sessions.

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 or if you are a Global MBA student contact 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) 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

If you are a Global MBA student contact 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/.

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.