



CHEM1001

Foundations of Chemical and Biomolecular Sciences 1

Session 1, Weekday attendance, North Ryde 2020

Department of Molecular Sciences

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General Information

Unit convenor and teaching staff

Unit Convenor

Dr Phani Rekha Potluri

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14ER 306

Please see ilearn

Lecturer

A/Prof Joanne Jamie

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4WW 231

By email

Lecturer

Prof Alison Rodger

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6WW 302

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.

Assessment Tasks

Coronavirus (COVID-19) Update

Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.

Students should consult [iLearn](#) for revised unit information.

[Find out more about the Coronavirus \(COVID-19\) and potential impacts on staff and students](#)

General Assessment Information

Attendance at practical and tutorial classes:

- You must attend and participate in all four practical classes to pass CHEM1001.
- You must attend and participate in at least 9 of the 12 weekly tutorials to pass CHEM1001.
- Please note that if you miss a practical class or tutorial class, **we are not required to offer you a make-up class.**

Tutorial Quizzes (20%):

- A 10–12 minute quiz online or on-paper will be held during each tutorial. Note that the quiz questions will be based on the lecture material, text book and tutorial question sets available on iLearn. Your final, total tutorial quiz mark, will be the average of 10 best individual quiz marks.

Practical class exercises (20%):

- Four practical classes worth 5% each. The pre-practical classes (40%), performance in the practical, the practical report (40%), and the post-practical exercises (10%) will be used to calculate the final mark for each practical class.

Mid-session test (20%):

- The mid-semester test is a hurdle assessment and 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 an opportunity to sit a new test 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 mid-semester test if you get below 30% in your first attempt.
- The mid-session test will be held in Week 7, as this will allow failing students to withdraw

without academic penalty. Note that the **last day to withdraw without academic penalty is Tuesday 28 April 2020.**

- Students that fail the mid-session test hurdle will be able to re-sit the test during the second week of the semester break. This week has been chosen in order to allow failing students to withdraw without academic penalty.
- Students that are unable to re-sit the test during the semester break (e.g. they are overseas) will be allowed to sit the test in Week 8. This option is not optimal and should be avoided, as students failing to pass the mid-semester test won't be able to withdraw without academic penalty.

Final Exam (40%):

- The final exam is a hurdle assessment and you will need to get $\geq 40\%$ 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 test 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 final exam if you get below 30% in your first attempt.

Information on Supplementary exams:

- If you receive a special consideration 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.

If you have difficulty attending and participating in a hurdle assessment task, please contact the Unit Convenor as soon as possible as, there may be alternatives available to make-up a missed task. If there are circumstances that mean you miss a hurdle assessment task, you can apply for a special consideration. To support your extension, you must submit a "Special Consideration Request" request via www.ask.mq.edu.au. See <https://students.mq.edu.au/study/my-study-program/special-consideration> for instructions on how to do this. Please note that evidence **must be given** to support your request for an extension. Note that **special consideration applications must be made within five working days of the assessment task due date.**

Decisions to approve/not approve a special consideration request are made by the university (and NOT the unit convenor).

Delivery and Resources

Coronavirus (COVID-19) Update

Any references to on-campus delivery below may no longer be relevant due to COVID-19.

Please check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

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 on a frequent basis.

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

Classes

See <https://timetables.mq.edu.au/2020> for class times and locations.

- **Lectures:**

While we hope that you will join us for lectures, it is important to note that lectures will be live streamed, as well as recorded (available at the CHEM1001 iLearn site). Lectures will be used to emphasise key points and concepts. Where possible, studying lecture materials before coming to class will help you get the most out of the lectures.

- **Tutorials:**

During tutorials, the problems assigned (available at the CHEM1001 iLearn site) will be discussed. We recommend that you work on the tutorial question sets before coming to class, so that you can take full advantage of the exercises.

- **Practicals:**

The practical classes for CHEM1001 are run in 14SCO 320 and 14SCO 308 (note that these rooms are connected). **It is very important that you understand that you will not be allowed to enter the laboratory unless you are wearing laboratory coats and enclosed footwear.** Safety glasses and disposable gloves are supplied. We no longer provide laboratory coats in the lab.

Teaching and Learning Strategy

CHEM1001 is a 10 credit-point, half-year unit and will require an average of 10 hours study per week (contact hours plus self-study time).

CHEM1001 is designed to introduce you to the principles of the molecular sciences, including

developing an understanding of the practical skills required to undertake simple chemistry experiments in an efficient and safe manner. The lecture materials, tutorials and practical classes complement each other, and along with quizzes, have been developed to increase your understanding of the topics so that you can achieve the learning outcomes.

The unit expectation is that you will:

- Attend all lectures and/or watch the lecture recordings
- Actively engage in the tutorial classes and attempt the set exercises
- Demonstrate reasonable competence in all practical exercises
- Spend an average of no less than 3 hours per week of private study in addition to class contact

If you prepare and attend all components of the unit and work consistently and continuously throughout the semester, you should be able to develop a strong understanding of the general chemistry and organic chemistry presented, and perform satisfactorily in this unit. Students who try to memorise just before exams do not do well in this unit. Instead a deeper understanding of the concepts is required.

- **Lectures** will be presented formally, although general questions may be asked in class, demonstrations provided, and examples of problems worked through, to strengthen and increase understanding of the concepts. Most lecture material will be available at the unit iLearn site, while other material will be provided in the lectures. **Based on observations of related units, we emphasize that coming to lectures and/or keeping up to date with lecture recordings is essential to prevent falling behind and performing poorly.** Learning is an active process, and as such, you must engage with the material. Reviewing lecture notes and relevant sections of the textbook (and beyond) before and after lectures is strongly recommended
- **Tutorial classes** are run to assist your understanding of the course material. Attempting the questions before the tutorial class to identify areas in which you need assistance is highly recommended. Past experience has demonstrated that there is a strong correlation between success in the unit and participation in all activities, including the tutorial classes.
- **Practical classes** are designed to develop basic laboratory skills, general safety practices, as well as critical and analytical thought. Pre-practical questions are designed to make sure you are ready for the practical work and have grasped the relevant theory and necessary safety practices. In-lab work is designed to teach you to appropriately record your experimental observations and to present your calculations in a detailed manner. Post-lab exercises are designed to assess your understanding of the theory behind the experiments conducted.

Recommended Textbooks:

Resources used by lecturers:

- **Openstax Chemistry 2e–**

Download for free at <https://openstax.org/details/books/chemistry-2e> or view the copy at

https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/Chemistry2e-OP_ZIUdkjH.pdf

- Text: **Fundamentals of organic chemistry** / John McMurry. 7th ed., Belmont, CA:Brooks/Cole,C 2011 **QD251.2.M4 2011**
- Text: **Pushing electrons: a guide for students of organic chemistry** by Daniel P. Weeks, Fourth Edition, 2014, Brooks/Cole,C engage Learning.

*These are the resources used by the lecturers but other general and organic chemistry textbooks are useful substitutes.

Other Additional Resources:

Text: **INTRODUCTORY CHEMISTRY** by Nivaldo J. Tro, Fifth Edition (Pearson New International Edition), 2015, Pearson Education **QD33.2 .T76 2015**

Unit Schedule

Coronavirus (COVID-19) Update

The unit schedule/topics and any references to on-campus delivery below may no longer be relevant due to COVID-19. Please consult [iLearn](#) for latest details, and check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

Week 1	Lecture 1	Lecture 2	Lecture 3	Practical	Tutorial &
	Monday 10am-11am	Thursday 3pm-4pm	Thursday 4pm-5pm		Quiz
	14SCOA Mason theatre	27WW Lotus theatre			
1	Orientation, matter and change, periodic table				
2	Molarity, structure and shape				T1: Week 2
3	Structure and naming of organic and inorganic compounds				T2: Week 3
4	Structure and naming of organic and inorganic compounds				T3: Week 4
5	Equilibria, acids and bases			Practical 1	T4: Week 5
6	Stoichiometry and hybridization, getting reactive			Practical 2	T5: Week 6

7	Alkanes and alkenes	Mid-Session Exam (20%)	T6: Week 7
Mid-session break			
8	Alkyl Halides, alcohols and ethers		T7: Week 8
9	Aldehydes and ketones	Practical 3	T8: Week 9
10	Carbohydrates, carboxylic acids and derivatives	Practical 4	T9: Week 10
11	Amines/Amino acids, peptides and proteins		T10: Week 11
12	Nucleic acids and their functions		T11: Week 12
13	Summary & review		T12: Week 13
*Note: This schedule is approximate and may be altered as required. Locations/lecturers may change. Any updates will be communicated via ilearn.			

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

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

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/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.

Changes from Previous Offering

The value of tutorial quizzes has been changed from 5% to 20%. The value of final exam has

been changed 50% to 40%.

Teaching Staff

Dr Phani Rekha Potluri, Unit Convenor, 14ER 306, email: phani-rekha.potluri@mq.edu.au. Please see iLearn for consultation hours.

A/Prof Joanne Jamie, Lecturer, 4WW 231, email: joanne.jamie@mq.edu.au. Please see iLearn for consultation hours.

Prof Alison Rodger, Lecturer, 6WW 302, email: alison.rodger@mq.edu.au. Please see iLearn for consultation hours.

A/Prof Jamie and Prof Rodger will be presenting the lectures. Dr Potluri is the convenor of this unit and should be consulted in relation to administrative issues.

Changes since First Published

Date	Description
05/02/2020	Unit schedule has been modified.