



CHEM6601

Synthesis

Session 1, Weekday attendance, North Ryde 2020

Department of Molecular Sciences

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General Information

Unit convenor and teaching staff

Unit Convenor/Lecturer

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Lecturer

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Credit points

10

Prerequisites

Admission to GradDipBiotech or GradCertLabAQMgt or GradDipLabAQMgt or MBiotech or MBioBus or MLabAQMgt or MRadiopharmSc or MSc or MScInnovChemBioSc

Corequisites

Co-badged status

CHEM2601

Unit description

This unit serves the needs of students pursuing masters studies that includes the disciplines of chemistry, biological, medical, materials and health sciences. It will be valuable to anyone with an interest in how organic and inorganic compounds react with one another, and how chemists use this knowledge of molecular interactions to synthesize new compounds with desirable properties (eg, new pharmaceuticals, new catalysts, and new materials). The unit focuses on the principles, mechanisms and synthetic procedures of organic and inorganic compounds. Topics include: chemical reactivity; stereochemistry; introduction to the spectroscopic identification of compounds; reaction mechanisms; and synthetic methods. The study of these mechanisms and methods provides an understanding of chemical processes and reactivity applicable in designed and living systems. The practical component is aimed at developing laboratory skills and deductive reasoning; it comprises syntheses of various classes of compounds and identification of unknown compounds by chemical and spectroscopic means.

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: Predict the relative reactivity of a series of related compounds

ULO2: Assess the risks and hazards associated with working in a synthetic laboratory environment

ULO3: Plan and carry out different types of synthetic reactions: specifically, perform functional group transformations to change one molecule into another and use carbon-carbon, carbon-nitrogen, carbon-oxygen, and metal-based bond forming reactions to construct larger molecules in a laboratory setting with confidence in a safe and efficient manner

ULO4: Use spectroscopic information to deduce the structure of simple organic and inorganic molecules

ULO5: Purify organic and inorganic compounds using basic synthetic techniques

ULO6: Write a report in a scientific format

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

If you miss a practical class, mid-term test/exam, or are late for completing an assessment due to illness or misadventure, you are required to 1) submit a request for special consideration no later than five (5) working days after the due date and 2) email the Unit Convenor.

A passing grade in the practical component (hurdle) is required to pass the unit. **Attendance in the practicals is compulsory, and no make-up labs will be available. Failure to attend more than once without a special consideration approval through ask.mq will result in failing this hurdle.**

Please find further information on Special Consideration here: <https://students.mq.edu.au/study/my-study-program/special-consideration>

Periodic quizzes (normally 10 minutes each) will come randomly in class to help you with **revising and keeping up** with the course material as the course progresses. The questions in the periodic quizzes resemble those in the exams. The answers will be provided and explained immediately afterwards. You can miss any or all of the periodic quizzes without apparent penalty. However, no make-up tests will be given, and the final exam's mark will be used for a missed spot test. This means that you must strive to attend all classes.

The mid-semester test (50 minutes) will be in week 6 (the specific date and coverage will be given on the iLearn website). It will be in a similar format to that of past exams and covers weeks 1 to 5 material. There will be no make-up exam for the mid-semester test, and with an approved special consideration, your final exam mark will be used for a missed mid-semester test mark.

Please refer to the unit's iLearn website for further details.

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

Required and Recommended Texts and/or Materials

- Online TopHat "Organic Chemistry" (required; please see sign up details on the unit's iLearn website)

- “Organic Chemistry”, 9th Edition (2016) by John McMurry; Cengage Learning (recommended)*
- “Organic Chemistry – Study Guide and Solutions Manual”, 9th Edition (2016) by Susan McMurry; Cengage Learning (recommended)*
- Molecular Model Set for Organic Chemistry (recommended)*
- “Pushing Electrons. A Guide for Students in Organic Chemistry”, 4th Edition (2014) by Daniel P. Weeks, Cengage Learning (recommended)*
- Inorganic Chemistry by Gary L. Miessler, Paul J. Fischer and Donald A. Tarr, 5th Edition (2014) Pearson (required)*
- “Introduction to Solid State Chemistry” by Smart and Moore, 4th Edition (2012) Taylor and Francis (recommended)*

*Textbooks for this unit can be purchased online from Booktopia <https://www.booktopia.com.au/coop>. Copies of the texts are also available in the library. Please see the unit's iLearn website for further details.

Lecture classes

The timetable may be subject to change so please check on the University web site at: <http://www.timetables.mq.edu.au/>

Interactive in-class attendance is ESSENTIAL to your success in this unit. These are not to be viewed as traditional “lectures” for passive information uptake but used to emphasize key points and concepts with relevant examples with your active participation. Studying the material to be covered **BEFORE** coming to a class is particularly productive in maximizing the learning outcomes in class. Classes will be run as a combination of formal lectures and interactive exercises. It is essential that your in-class participation is maintained throughout the semester or you risk failing the unit. Historically, non-attendance has a much more deleterious effect that is ultimately reflected in exam performances. Circumstances such as routine demands of employment/financial need or extra-curricular activities, routine family problems, and difficulties adjusting to university life and stress associated with the demands of academic work, are not unforeseeable circumstances beyond your control and should not be used as an excuse to miss a class.

Most of the class material will be available on the unit website, while there will be some provided in class. While iLectures or recorded lectures are available in this unit, they must not be used in place of class participation but rather serve as useful resources for reviewing the content.

Periodic quizzes may be conducted at any stage in class. These periodic quizzes will cover material discussed 1 to 2 weeks prior to that day's class therefore **all students are expected to keep up to date with course material through revision each week**. There are also online quizzes associated with the practicals (see iLearn for details). These also are to encourage continuous learning of the course material.

Tutorials

Tutorials are critical for effective learning and practicing how to solve problems in order to do well in tests/exams. There are no tutorials in week 1. You should choose one from the two sessions and stick with the same session throughout the semester.

Workshops

Attendance and active participation in the problem-solving workshop sessions is compulsory, and marks will be awarded for your interactive contributions. Students are expected to attempt the questions prior to attending and bring in all relevant course notes and textbooks for the workshops. The workshop problems will be on the iLearn website closer to the dates. Workshops are long tutorial sessions where you will be asked to answer final exam style questions - some exam questions will be drawn straight from the workshop questions. The location will be announced via iLearn.

Practicals/workshops

The detailed lab practical notes/workshop schedule is provided through the unit's iLearn website. The class is divided into two groups (Group A and Group B) for attending the practicals/workshops according to Group A Schedule and Group B Schedule (on iLearn).

Participation in the practicals is compulsory, and no make-up labs will be available. **Failure to attend more than once without a special consideration approval will result in being failed.** Some of the lab sessions will be workshops on problem solving. Workshops are essentially long tutorial sessions where you will be asked to answer final exam style questions – some final exam questions will be drawn straight from the workshop questions. Please refer to iLearn instructions for further details.

There are no practicals in the 1st week. The students are to use the 1st week practical time to self study and prepare for general practical requirements such as performing risk assessments of experiments and safety review. Please see iLearn instructions for details.

Once you have chosen your group (A or B) and a practical session, you will attend the same session slot for the entire semester.

Technology Used and Required

You must regularly check the unit web page for course related information. The web page for this unit can be found at: <http://ilearn.mq.edu.au>

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

Please see iLearn for details.

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

This year's offering has significant differences in the organization of its content and practical activities/schedules from its previous offering in the year before. The recommended and required texts however are the same as those from last year.