CHEM6201

Analysis and Measurement

Session 2, Special circumstances, North Ryde 2021

Archive (Pre-2022) - Department of Molecular Sciences

Contents

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
Unit Convenor
Yuling Wang
yuling.wang@mq.edu.au
Contact via Email
4WW-229
Monday to Friday by appointment

Lecturer
Ian Jamie
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Contact via Email
4WW-236
Open door

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

Unit description
Analysis and measurement of the molecular composition and structure of matter is widely conducted in research and industry. Understanding the principles of molecular analysis and measurement is an essential part of any scientist's education. Molecular analysis involves separating molecules, measuring the molecular reaction rate (kinetics), determining identity, concentration and properties of analytes. This unit introduces the basic principles and approaches to undertake measurements of samples from across the chemical, biomolecular, microbiology and medical disciplines. Student will develop knowledge through lectures, tutorials, workshops and practicals, and gain hands-on experience with instrumentation used to make measurements and conduct analyses. The unit is a core component for students majoring in chemical and biomolecular sciences.

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: Demonstrate an understanding of the concepts of molecular analysis and measurement in the molecular sciences.

ULO2: Explain the principles of a range of techniques used for the analysis and measurement employed in the molecular sciences.

ULO3: Apply quantitative analysis methods and statistical techniques for the collection and analysis of data relevant to the molecular sciences.

ULO4: Develop intermediary chemistry laboratory skills and understand and implement laboratory safety procedures.

ULO5: Interpret and draw sound conclusions from analytical chemical data.

ULO6: Communicate effectively within the conventions of the molecular sciences discipline.

General Assessment Information

Please refer to the Macquarie University Assessment policy regarding submission of assignments, plagiarism, extensions, late submission etc.

Attendance at laboratory practicals and workshops: Please note that attendance at all 5 lab practicals and 6 workshops is compulsory. The laboratory component of CHEM6201 is a **hurdle** requirement. There will be a 10% (of the practical work) per day penalty for late submission of the report. Late submission will not be accepted after 7 days due and a mark of zero will be received. If you are unable to attend class, or hand in a form of assessment due to illness or misadventure, you must submit a Special Consideration Request 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, Dr. Yuling Wang (yuling.wang@mq.edu.au).

Assessment Tasks

Name	Weighting	Hurdle	Due
Laboratory Work	25%	Yes	Two weeks after each lab session
Workshops	10%	No	One week after each workshop session
Mid-semester Test	10%	No	Week 7
Online Quizzes	10%	No	Week 10 and Week 12
Final 3 hour examination	45%	No	University Examination Period

Laboratory Work

Assessment Type [1]: Lab report
Indicative Time on Task [2]: 15 hours
Due: **Two weeks after each lab session**
Weighting: **25%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

There will be 5 lab practicals with each lab assessment contributing 5%.

On successful completion you will be able to:

- Demonstrate an understanding of the concepts of molecular analysis and measurement in the molecular sciences.
- Explain the principles of a range of techniques used for the analysis and measurement employed in the molecular sciences.
- Apply quantitative analysis methods and statistical techniques for the collection and analysis of data relevant to the molecular sciences.
- Develop intermediary chemistry laboratory skills and understand and implement laboratory safety procedures.
- Interpret and draw sound conclusions from analytical chemical data.
- Communicate effectively within the conventions of the molecular sciences discipline.

Workshops

Assessment Type [1]: Problem set
Indicative Time on Task [2]: 6 hours
Due: **One week after each workshop session**
Weighting: **10%**

There will be 6 workshops but only 4 workshops will be assessed. The assessment will be based on in class tasks and problem sets, with bonus marks available for optional take home exercises submitted after the classes.

On successful completion you will be able to:

- Demonstrate an understanding of the concepts of molecular analysis and measurement

in the molecular sciences.
- Explain the principles of a range of techniques used for the analysis and measurement employed in the molecular sciences.
- Apply quantitative analysis methods and statistical techniques for the collection and analysis of data relevant to the molecular sciences.
- Interpret and draw sound conclusions from analytical chemical data.
- Communicate effectively within the conventions of the molecular sciences discipline.

Mid-semester Test

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 6 hours
Due: **Week 7**
Weighting: **10%**

Mid Semester Test will be run in the Workshop and the topics within this test cover the basic data evaluation and the kinetics.

On successful completion you will be able to:
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- Explain the principles of a range of techniques used for the analysis and measurement employed in the molecular sciences.
- Apply quantitative analysis methods and statistical techniques for the collection and analysis of data relevant to the molecular sciences.
- Interpret and draw sound conclusions from analytical chemical data.

Online Quizzes

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 5 hours
Due: **Week 10 and Week 12**
Weighting: **10%**

There will be two online quizzes to help you understand the concepts presented in the lectures.

On successful completion you will be able to:

- Demonstrate an understanding of the concepts of molecular analysis and measurement in the molecular sciences.
- Explain the principles of a range of techniques used for the analysis and measurement employed in the molecular sciences.
- Interpret and draw sound conclusions from analytical chemical data.

Final 3 hour examination

Assessment Type [1]: Examination
Indicative Time on Task [2]: 30 hours
Due: **University Examination Period**
Weighting: **45%**

The final examination will be 3 hours in length with 10 minutes reading time, consisting of multiple choice and short 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.

On successful completion you will be able to:

- Demonstrate an understanding of the concepts of molecular analysis and measurement in the molecular sciences.
- Explain the principles of a range of techniques used for the analysis and measurement employed in the molecular sciences.
- Apply quantitative analysis methods and statistical techniques for the collection and analysis of data relevant to the molecular sciences.
- Develop intermediary chemistry laboratory skills and understand and implement laboratory safety procedures.
- Interpret and draw sound conclusions from analytical chemical data.
- Communicate effectively within the conventions of the molecular sciences discipline.

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[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

Lectures: Lectures will be presented formally. Some lecture material will be available on the unit website beforehand (in 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 for 13 weeks. Two Revision lectures will be provided in the last week of the semester.

Laboratory Classes: Practical classes are designed for you to develop basic laboratory, safety, and critical and analytical analysis skills. There will be 5 three-hour lab practicals on-campus. Laboratory notes will be available on iLearn for download, you must bring a copy with you to your laboratory class and are expected to have read through all of the planned activities. Please also bring a lab coat and laboratory notebook to your lab session.

Workshop Classes: Workshop classes are designed to introduce students to a range of problem-solving skills and mainly consist of material related to lab practical, lecture topics, using a series of activities, problems, or questions during the workshop. There will be 6 two-hour workshops run fortnightly. Workshop notes will be available on iLearn for download. You are expected to have read through all of the planned activities.

Optional Weekly Online Questions: There are no formal tutorial classes in this unit, but optional weekly online questions with answer sheets will be provided on iLearn site of this unit.

Required and Recommended Texts and/or Materials:

Prescribed text:

- D.C. Harris, Quantitative Chemical Analysis, 10th Edition, Macmillan Publishing. (2020)

Recommended Textbook and/or Materials:

- D. A. Skoog, D.M.West, F.J.Holler, S.R.Crouch, Fundamentals of Analytical Chemistry, 9th Edition, Brooks/Cole, Thomson Learning, Inc (2014).
- D.S. Hage, J.D. Carr, Analytical Chemistry and Quantitative Analysis, 1st Edition, Pearson (2011). (Chapter 23).

Technology Used and Required iLearn: You are expected to access the unit website on a frequent basis and download PDF files provided. You are strongly encouraged to make use of the discussion forum available on the unit website 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. See https://students.mq.edu.au/support/technology/software/microsoft. It is important that you have a scientific calculator as hand-held calculators will be used in practicals, workshops, for assignments, tests, and in the final examination. Note that text retrieval calculators are not allowed in the final examination. The use will be made of Excel and other data processing and display software. Computers carrying this software are available in the teaching laboratories. Items of interest and links to other online material will be

placed on the unit iLearn website.

Unit Schedule

Lectures begin on 26th July 2021 and will be held on:

Day	Time	Location
Monday	11-12 pm	Online (Zoom)
Tuesday	11-12 pm	Online (Zoom)

Laboratory practicals start the second week of the semester and will be held on:

Sessions	Weeks	Day	Time	Location
1	2, 4, 6, 8, 10	Friday	9-12 pm	14SCO-347 Teaching Lab
2	2, 4, 6, 8, 10	Friday	2-5 pm	14SCO-347 Teaching Lab

Students will need to register for **one** session only.

Workshop classes start the third week of the semester and will be held on:

Sessions	Weeks	Day	Time	Location
1	3, 5, 7, 9, 11, 13	Tuesday	9-11 am	11 Wally's Walk, 140 Tutorial Rm
2	3, 5, 7, 9, 11, 13	Tuesday	2-4 pm	11 Wally's Walk, 140 Tutorial Rm

Students will need to register for **one** session only.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (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). 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) 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.