MOLS7911

Laboratory Skills for Molecular Science Research

Session 1, Weekday attendance, North Ryde 2021

Archive (Pre-2022) - Department of Molecular Sciences

Contents

Notice

As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to timetable viewer. To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

General Information

Unit convenor and teaching staff
Unit Convenor
Sasha Tetu
sasha.tetu@mq.edu.au
Contact via email
room 201 14ER (E8A201)
Monday-Thursday

Alf Garcia-Bennett
alf.garcia@mq.edu.au

Credit points
10

Prerequisites
Admission to MRes

Corequisites

Co-badged status

Unit description
This unit will provide hands-on experience of several of the sophisticated technologies currently utilised in molecular science. Students will select a portfolio of techniques across chemistry, biochemistry, biophysics, genomics or microbiology, according to their discipline background and interest. Independent skills and technical competency in a minimum of three contemporary methodologies or instrumentation types will be developed through intensive practical sessions with Macquarie researchers. This is a skills-focused unit designed to practically enrich methods encountered from a more theoretical standpoint in other units.

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: Utlise appropriate practical and procedural knowledge to perform advanced methods in contemporary molecular research and describe how these methods are used to solve contemporary problems

ULO2: Demonstrate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting for their chosen methods
ULO3: Execute independent analytical and critical skills required for scientific experimentation and research design allowing to implement the correct methodology to characterise a specific type of sample
ULO4: Analyse experimental data gathered from a range of research technologies and communicate the outcomes of this analysis in written and oral form

Assessment Tasks

Name	Weighting	Hurdle	Due
Module 1: Report	33%	No	Week 5
Module 2: Report	33%	No	Week 10
Module 3: Report	34%	No	Week 13

Module 1: Report

Assessment Type [1]: Practice-based task
Indicative Time on Task [2]: 45 hours
Due: **Week 5**
Weighting: **33%**

Report, Standard Operating Procedure (SOP) or skills evaluation; as appropriate

On successful completion you will be able to:

- Utlise appropriate practical and procedural knowledge to perform advanced methods in contemporary molecular research and describe how these methods are used to solve contemporary problems
- Demonstrate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting for their chosen methods
- Execute independent analytical and critical skills required for scientific experimentation and research design allowing to implement the correct methodology to characterise a specific type of sample
- Analyse experimental data gathered from a range of research technologies and communicate the outcomes of this analysis in written and oral form

Module 2: Report

Assessment Type [1]: Practice-based task

Indicative Time on Task [2]: 45 hours
Due: **Week 10**
Weighting: **33%**

Report, Standard Operating Procedure (SOP) or skills evaluation; as appropriate

On successful completion you will be able to:

- Utlise appropriate practical and procedural knowledge to perform advanced methods in contemporary molecular research and describe how these methods are used to solve contemporary problems
- Demonstrate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting for their chosen methods
- Execute independent analytical and critical skills required for scientific experimentation and research design allowing to implement the correct methodology to characterise a specific type of sample
- Analyse experimental data gathered from a range of research technologies and communicate the outcomes of this analysis in written and oral form

Module 3: Report

Assessment Type [1]: Practice-based task
Indicative Time on Task [2]: 47 hours
Due: **Week 13**
Weighting: **34%**

Report, Standard Operating Procedure (SOP) or skills evaluation; as appropriate

On successful completion you will be able to:

- Utlise appropriate practical and procedural knowledge to perform advanced methods in contemporary molecular research and describe how these methods are used to solve contemporary problems
- Demonstrate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting for their chosen methods
- Execute independent analytical and critical skills required for scientific experimentation and research design allowing to implement the correct methodology to characterise a specific type of sample
- Analyse experimental data gathered from a range of research technologies and communicate the outcomes of this analysis in written and oral form

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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

This unit is designed to provide you with the opportunity to gain lab-based skills applicable to modern molecular science research.

Unit Schedule

Students will complete three separate lab skills modules throughout the semester. For each module students can select between two different techniques and will then gain hands on experience in how to apply their chosen technique in a research setting.

Module 1 (weeks 2-5): Synthetic Biology OR Physical Adsorption

Module 2 (weeks 7-10): Microscopy OR NMR Spectroscopy for Synthetic Chemistry

Module 3 (weeks 10-13): Flow Cytometry OR Spectroscopy (CD/IR)

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.