



MOLS7910

The Research Experience

Session 1, In person-scheduled-weekday, North Ryde 2022

School of Natural Sciences

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General Information

Unit convenor and teaching staff

Unit Convenor

Alison Rodger

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Contact via 0426627077

6WW 302

By arrangement

Credit points

10

Prerequisites

Admission to MRes and 40cp at 7000 level

Corequisites

Co-badged status

Unit description

This unit is designed to provide hands-on experience by direct interface with molecular science underway in the Department of Chemistry and Biomolecular Sciences. Students will participate in the programs of two distinct research groups over the semester and navigate typical situations encountered as members of a scientific research team. They will engage in a range of pertinent laboratory activities, receive preparative training in advanced molecular techniques from research scientists, and attend team meetings at which experimental data are reviewed and research planning is encountered.

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: Describe contemporary research practice through participation in several teams engaged in molecular science research

ULO2: Carry out a selection of advanced laboratory procedures, incorporating safe handling of materials (chemical or biological)

ULO3: Actively participate in data collection and report/reflect on experimental findings

to the research team

ULO4: Maintain a daily record, to research-level standard, of laboratory work undertaken and results obtained

General Assessment Information

Late submissions are permitted in this unit but see the General Faculty Policy on assessment submission deadlines and late submissions below:

Online quizzes, in-class activities, or scheduled tests and exam must be undertaken at the time indicated in the unit guide. Should these activities be missed due to illness or misadventure, students may apply for Special Consideration.

All other assessments must be submitted by 5:00 pm on their due date. Should these assessments be missed due to illness or misadventure, students should apply for Special Consideration.

Assessments not submitted by the due date will receive a mark of zero **unless** late submissions are specifically allowed as indicated in the unit guide or on iLearn.

If late submissions are permitted as indicated in the unit guide or on iLearn a consistent penalty will be applied for late submissions as follows:

A 12-hour grace period will be given after which the following deductions will be applied to the awarded assessment mark: 12 to 24 hours late = 10% deduction; for each day thereafter, an additional 10% per day or part thereof will be applied until five days beyond the due date. After this time, a mark of zero (0) will be given. For example, an assessment worth 20% is due 5 pm on 1 January. Student A submits the assessment at 1 pm, 3 January. The assessment received a mark of 15/20. A 20% deduction is then applied to the mark of 15, resulting in the loss of three (3) marks. Student A is then awarded a final mark of 12/20.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Laboratory notebook A</u>	15%	No	Week 7
<u>Laboratory notebook B</u>	15%	No	Week 13
<u>Supervisor A report</u>	20%	No	Week 7
<u>Supervisor B Report</u>	20%	No	Week 13
<u>Research presentation A</u>	15%	No	Week 7
<u>Research presentation B</u>	15%	No	Week 13

Laboratory notebook A

Assessment Type ¹: Lab book

Indicative Time on Task ²: 4 hours

Due: **Week 7**

Weighting: **15%**

A notebook will be provided for the recording of your laboratory activities in a style appropriate to the relevant research discipline. A laboratory notebook forms the primary source of new experimental information and contributes to formal records maintained by a research team. Your lab notebook must be written up as experiments are set-up and progress, alongside your observations or insights. Each task and observation must be clearly dated, and reflection noted on the experimental result. The level of description should be sufficient to allow experiments to be replicated by another worker. The names and storage location of all data files and samples related to each experiment must be identified clearly. Your notebook must be certified on a weekly basis by your supervisor or a senior researcher in your team.

On successful completion you will be able to:

- Describe contemporary research practice through participation in several teams engaged in molecular science research
- Carry out a selection of advanced laboratory procedures, incorporating safe handling of materials (chemical or biological)
- Maintain a daily record, to research-level standard, of laboratory work undertaken and results obtained

Laboratory notebook B

Assessment Type ¹: Lab book

Indicative Time on Task ²: 4 hours

Due: **Week 13**

Weighting: **15%**

As for A, you will maintain a certified record of your laboratory activities

On successful completion you will be able to:

- Describe contemporary research practice through participation in several teams engaged in molecular science research

- Carry out a selection of advanced laboratory procedures, incorporating safe handling of materials (chemical or biological)
- Maintain a daily record, to research-level standard, of laboratory work undertaken and results obtained

Supervisor A report

Assessment Type ¹: Practice-based task

Indicative Time on Task ²: 0 hours

Due: **Week 7**

Weighting: **20%**

Your supervisor will report on your laboratory performance, technical competencies and degree of research engagement. Factors such as attention to detail, ability to learn new methods, and your contribution to experimental interpretation will be assessed.

On successful completion you will be able to:

- Describe contemporary research practice through participation in several teams engaged in molecular science research
- Carry out a selection of advanced laboratory procedures, incorporating safe handling of materials (chemical or biological)
- Actively participate in data collection and report/reflect on experimental findings to the research team

Supervisor B Report

Assessment Type ¹: Practice-based task

Indicative Time on Task ²: 0 hours

Due: **Week 13**

Weighting: **20%**

As for A, your supervisor will report on your laboratory experience

On successful completion you will be able to:

- Describe contemporary research practice through participation in several teams engaged in molecular science research
- Carry out a selection of advanced laboratory procedures, incorporating safe handling of

materials (chemical or biological)

- Actively participate in data collection and report/reflect on experimental findings to the research team

Research presentation A

Assessment Type ¹: Presentation

Indicative Time on Task ²: 4 hours

Due: **Week 7**

Weighting: **15%**

During your last week of placement, you will give a short presentation at a research team meeting outlining the experiments in which you were involved and some background literature. You will receive constructive feedback on your results or understanding. By attending group meetings throughout your research team visit, you will be exposed to examples of short presentations by other student researchers.

On successful completion you will be able to:

- Describe contemporary research practice through participation in several teams engaged in molecular science research
- Carry out a selection of advanced laboratory procedures, incorporating safe handling of materials (chemical or biological)
- Actively participate in data collection and report/reflect on experimental findings to the research team

Research presentation B

Assessment Type ¹: Presentation

Indicative Time on Task ²: 4 hours

Due: **Week 13**

Weighting: **15%**

As for A, during the last week of placement, you will give a short presentation at a research team meeting

On successful completion you will be able to:

- Describe contemporary research practice through participation in several teams engaged in molecular science research

- Carry out a selection of advanced laboratory procedures, incorporating safe handling of materials (chemical or biological)
- Actively participate in data collection and report/reflect on experimental findings to the research team

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 hands-on experience by direct interface with molecular science research underway at Macquarie. Students will participate in the programs of two distinct research groups over the semester and navigate typical situations encountered as members of a scientific research team. They will engage in a range of inductions and training, pertinent laboratory activities, receive preparative training in advanced molecular techniques from research scientists, and attend team meetings at which experimental data are reviewed and research planning is encountered.

Perhaps the most important aspect of this unit is that you are required to manage your own work programme. Everyone will have a different programme to achieve the unit goals. When you embark on a research project you will be doing something no-one has done before. This unit is an opportunity to develop those skills within a supported framework. It is up to you to understand what is required and then design your own work programme to deliver the unit learning outcomes and assessment tasks. You must be in regular communication with the Unit Convenor as well as your supervisors – it is up to you to make sure the information flows. You will have to work with a variety of different people whose goals are often quite different from your own. So, you will need to devise a unique solution to ensure that they get what they want while giving you what you need. The Unit Convenor will not set this up for you but will support you to do it for yourself. For better or worse, high quality research in Molecular Science is as much about people management as about creative innovative scientific endeavor.

Off-shore students

Off-shore students **must** email the convenor as soon as possible to discuss study options.

Unit Schedule

Week 1: After the introductory unit meeting, you will arrange to meet with at least four selected Project leaders to discuss projects underway in their teams. You will be guided by the published Research booklet of the Molecular Sciences research groups to be aware of all projects on offer.

Week 2: During the scheduled MOLS7910 class, you will receive a general orientation and Safety outline from key staff.

By end of Week 2 you must nominate (to the Unit convenor) 4 groups in which you are interested to take placements (by email). Two of these will be assigned to you as your LabA and LabB experiences according to availability.

During the two 5 week-sessions of laboratory work, you are expected to be present in the participating laboratory for 14 hours per week, as best fits your and your supervisor's schedules. During this time, you will “shadow” a researcher and you will write up a laboratory notebook,

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](#)
- [Assessment Procedure](#)
- [Complaints Resolution 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

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the 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

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

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 since First Published

Date	Description
01/02/2022	I have added this to ASSESSMENT: Late submissions are permitted in this unit but see the General Faculty Policy on assessment submission deadlines and late submissions below: Online quizzes, in-class activities, or scheduled tests and exam must be undertaken at the time indicated in the unit guide. Should these activities be missed due to illness or misadventure, students may apply for Special Consideration. All other assessments must be submitted by 5:00 pm on their due date. Should these assessments be missed due to illness or misadventure, students should apply for Special Consideration. Assessments not submitted by the due date will receive a mark of zero unless late submissions are specifically allowed as indicated in the unit guide or on iLearn. If late submissions are permitted as indicated in the unit guide or on iLearn a consistent penalty will be applied for late submissions as follows: A 12-hour grace period will be given after which the following deductions will be applied to the awarded assessment mark: 12 to 24 hours late = 10% deduction; for each day thereafter, an additional 10% per day or part thereof will be applied until five days beyond the due date. After this time, a mark of zero (0) will be given. For example, an assessment worth 20% is due 5 pm on 1 January. Student A submits the assessment at 1 pm, 3 January. The assessment received a mark of 15/20. A 20% deduction is then applied to the mark of 15, resulting in the loss of three (3) marks. Student A is then awarded a final mark of 12/20. And to RESOURCES Off-shore students Off-shore students must email the convenor as soon as possible to discuss study options.