



# CBMS785

## Laboratory Skills for Molecular Science Research

S1 Day 2018

*Dept of Chemistry & Biomolecular Sciences*

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#### Disclaimer

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## General Information

Unit convenor and teaching staff Alf Garcia-Bennett <a href="mailto:alf.garcia@mq.edu.au">alf.garcia@mq.edu.au</a>
Credit points 4
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:

Develop practice and procedural knowledge in a range of advanced methods utilised in contemporary molecular research

Generate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting

Execute independent analytical and critical skills required for scientific experimentation and research design

Practice communication and written analysis concerning experimental data gathered from a range of research technologies

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#"><u>Module 1: Report</u></a>	33%	No	April 5
<a href="#"><u>Module 2: Report</u></a>	33%	No	May 17
<a href="#"><u>Module 3: Report</u></a>	34%	No	June 14

### Module 1: Report

Due: **April 5**

Weighting: **33%**

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

On successful completion you will be able to:

- Develop practice and procedural knowledge in a range of advanced methods utilised in contemporary molecular research
- Generate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting
- Execute independent analytical and critical skills required for scientific experimentation and research design
- Practice communication and written analysis concerning experimental data gathered from a range of research technologies

### Module 2: Report

Due: **May 17**

Weighting: **33%**

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

On successful completion you will be able to:

- Develop practice and procedural knowledge in a range of advanced methods utilised in contemporary molecular research
- Generate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting
- Execute independent analytical and critical skills required for scientific experimentation and research design
- Practice communication and written analysis concerning experimental data gathered

from a range of research technologies

## Module 3: Report

Due: **June 14**

Weighting: **34%**

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

On successful completion you will be able to:

- Develop practice and procedural knowledge in a range of advanced methods utilised in contemporary molecular research
- Generate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting
- Execute independent analytical and critical skills required for scientific experimentation and research design
- Practice communication and written analysis concerning experimental data gathered from a range of research technologies

## Delivery and Resources

This unit will provide hands-on experience in advanced contemporary technologies/instrumentation currently used in molecular science. Students will select three techniques from a portfolio of training modules offered by skilled researchers within CBMS. Independent skills and technical competency will be developed through intensive small-group laboratory training.

Each module is of 4 weeks in duration (weeks 2-5; weeks 6-9; weeks 10-13). Scheduling of tasks will be dependent on instrument and staff availability.

5pm deadline for electronic submission of all reports and/or SOP via the Turnitin portal on the iLearn site. Late submissions will be subject to penalty.

Technologies Used and Required: Specialist scientific equipment, computers and software will be made available to you under supervision, but you will require your own laptop with basic software installed to prepare your reports and SOP documentation.

## Unit Schedule

Unit activities will generally place each Thursday, 10 am -2 pm. The Unit will be generally structured as follows:

Week 1: Unit introduction; meet with unit convenor.

Weeks 2-5: Module 1 placement

Weeks 6-9: Module 2 placement

Weeks 10-13: Module 3 placement

## 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.*)

Undergraduate 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 shown in *iLearn*, 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](https://ask.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](https://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)

- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## 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](http://ask.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/](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.

## Graduate Capabilities

### PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

#### Learning outcome

- Practice communication and written analysis concerning experimental data gathered from a range of research technologies

#### Assessment tasks

- Module 1: Report
- Module 2: Report
- Module 3: Report

### PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

## Learning outcomes

- Develop practice and procedural knowledge in a range of advanced methods utilised in contemporary molecular research
- Generate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting

## Assessment tasks

- Module 1: Report
- Module 2: Report
- Module 3: Report

## PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

## Learning outcomes

- Develop practice and procedural knowledge in a range of advanced methods utilised in contemporary molecular research
- Generate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting
- Execute independent analytical and critical skills required for scientific experimentation and research design

## Assessment tasks

- Module 1: Report
- Module 2: Report
- Module 3: Report

## PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

## Learning outcomes

- Develop practice and procedural knowledge in a range of advanced methods utilised in contemporary molecular research
- Generate individual technical skills in sample handling and instrumentation relevant to the research (as distinct from classroom) setting
- Execute independent analytical and critical skills required for scientific experimentation and research design

## Assessment tasks

- Module 1: Report
- Module 2: Report
- Module 3: Report

## PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

## Learning outcome

- Practice communication and written analysis concerning experimental data gathered from a range of research technologies

## Assessment tasks

- Module 1: Report
- Module 2: Report
- Module 3: Report

## PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

## Learning outcome

- Execute independent analytical and critical skills required for scientific experimentation



and research design