CBMS785
Laboratory Skills for Molecular Science Research
S1 Day 2016
Dept of Chemistry & Biomolecular Sciences

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### General Information

Unit convenor and teaching staff
convenor
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na
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by appt

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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://students.mq.edu.au/important-dates](https://students.mq.edu.au/important-dates)

### Learning Outcomes

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

**Assessment Tasks**

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<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Due</th>
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<tbody>
<tr>
<td>Module 1: Report</td>
<td>33%</td>
<td>April 1</td>
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<tr>
<td>Module 2: Report</td>
<td>33%</td>
<td>May 13</td>
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<td>34%</td>
<td>June 10</td>
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**Module 1: Report**

Due: **April 1**  
Weighting: **33%**

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

This Assessment Task relates to the following 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
- Practice communication and written analysis concerning experimental data gathered from a range of research technologies

**Module 2: Report**

Due: **May 13**  
Weighting: **33%**

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

This Assessment Task relates to the following 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
- Practice communication and written analysis concerning experimental data gathered from a range of research technologies

Module 3: Report

Due: **June 10**
Weighting: **34%**

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

This Assessment Task relates to the following 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
- 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.

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 Friday, 9 am -1 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. Students should be aware of the following policies in particular with regard to Learning and Teaching:


In addition, a number of other policies can be found in the Learning and Teaching Category of 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/support/student_conduct/](https://students.mq.edu.au/support/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](http://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/](http://students.mq.edu.au/support/)

**Learning Skills**

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.
Graduate Capabilities

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 - 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 outcomes**

- 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**

- 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 - 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

Changes from Previous Offering

Organisation structure is unchanged from 2015, but specific training modules offered will differ according to staff availability and student’s research interests.