



CBMS700

Research Frontiers in Chemistry and Biomolecular Sciences

S1 Day 2019

Dept of Molecular Sciences

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General Information

Unit convenor and teaching staff

Unit Convenor

Bridget Mabbutt

bridget.mabbutt@mq.edu.au

Contact via via iLearn page

6WW 306

by appointment

Credit points

4

Prerequisites

Admission to MRes

Corequisites

Co-badged status

Unit description

This unit is designed to engage students with those topics currently dominating the chemical and biomolecular sciences. It will expose students to current research questions across the range of the broad discipline. Activities are based on seminar attendance, as well as directed reading of research papers and the discussion and critiquing of research topics in written and seminar forms. Students will be guided to a range of readings that engage new directions of scientific thought and break-through methodologies, such as recent Nobel Prize-winning outcomes. This unit will allow students to reflect on current trends and to communicate changes underway.

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:

Will have obtained advanced knowledge of molecular science through attendance of a series of research seminars ranging across the discipline

Have a familiarity with technology trends developing internationally in contemporary molecular science research

Practiced a professional level of communication (written, verbal) to articulate cutting-edge achievements and the manner by which key discoveries are made in the molecular sciences

Assessment Tasks

Name	Weighting	Hurdle	Due
Seminar attendance portfolio	10%	No	7 June
Essay (draft)+ viva	30%	No	3 April
Annotated literature review	15%	No	3 April
Technology essay (final)	20%	No	22 May
Seminar reflection	25%	No	29 May (OR 5 Jun)

Seminar attendance portfolio

Due: **7 June**

Weighting: **10%**

Departmental research seminars occur in the Molecular Sciences Department on selected weeks, generally scheduled Tuesdays 1-2pm. This is a conventional forum by which visiting scientists formally convey their research findings to a peer audience, and research staff and students of the Department are expected to attend. Such seminars differ from more informal research discussions, such as occurs within research team meetings.

You will be required to attend a total of 10 Research Seminars in the semester, usually of 1 hr duration, and confirm your attendance with sign-off from the day's seminar convenor.

You are a guest at these formal settings in which the Department shows respect and gives full attention to the speaker: always arrive on time (space can be limited) and do not leave the session until after questions are completed. Should it be essential to leave the room before others, always do so quietly at a back exit. Make sure you turn your mobile phone off and leave it in your bag. Photographing of screen presentations is not acceptable in this forum, as unpublished data may be presented.

Research seminars held elsewhere in the University, or across the Sydney region, will also be of direct relevance to your research interest, and you are welcome to include some of these in your attendance program, where they are endorsed by an educational organisation. Please seek permission from A/Prof. Mabbutt should you plan to include other types of seminar experiences in your portfolio: commercial technical presentations are not considered appropriate for inclusion in this research task.

On successful completion you will be able to:

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- Have a familiarity with technology trends developing internationally in contemporary molecular science research

Essay (draft)+ viva

Due: **3 April**

Weighting: **30%**

You will be supervised in readings concerning a selected technology currently having breakthrough impact within molecular science. Students will be able to select their own specific sub- topic within this emerging technology of significance.

You will prepare a **written review of ~2500 words (limit: 7 pages, incl. figures)** outlining the molecular basis of this new technology, its development and some recent applications. You should include illustrative diagrams, which must be your own original artwork, and referenced appropriately. Your submission will be accompanied by a separately assessed **annotated literature review** (see below) summarising your sources.

To prepare for this essay, you will attend a **workshop** addressing report writing and referencing skills (attendance to be documented via your Seminar Record card). It is acceptable to view an alternative webinar, provided the material is extensive and relevant to scientific report writing.

The draft version of your report will form the basis for a **viva (~20 min)** with your academic theme leader. Following this discussion and feedback concerning your draft, you will re-submit an improved version of your review (see below).

The grade awarded will reflect the degree to which you demonstrate understanding of the molecular basis underlying the specific technology, and your awareness of the scientific impact and potential demonstrated by its recent application. The rubric used to grade your work is published on the iLearn site.

Marks will be deducted for late submissions, or essays exceeding the specified length.

On successful completion you will be able to:

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- Practiced a professional level of communication (written, verbal) to articulate cutting-edge achievements and the manner by which key discoveries are made in the molecular sciences

Annotated literature review

Due: **3 April**

Weighting: **15%**

You will submit an annotated listing of literature you have read and analysed to prepare for your essay topic. Generally, 20-30 papers would be cited in such a task. Your annotated review should list each citation, in an appropriate journal style, each accompanied by 2-3 sentences summarising the impactful data/findings reported within the publication.

Your grade will be determined by (i) the extent and relevancy of literature covered, (ii) the degree of insight and evaluation in the annotations you make against each entry, and (iii) the formatting quality of your work. The rubric used by your marker is available on the Unit iLearn site.

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Technology essay (final)

Due: **22 May**

Weighting: **20%**

In scientific research, publications are a result of collaborative writing. Thus, it is normal to prepare several draft versions of a document, for circulation amongst several authors. A final publication will incorporate feedback and insight from many people (usually named as authors) who contributed to the work. Academic theses are also the result of iterative writing, incorporating feedback between supervisor and student over several rounds.

Here, your thesis practice task is to re-submit (on time, to a designated length) an improved version of your review essay, incorporating feedback from your viva and your first written draft.

The grade awarded will reflect the degree to which you made improvements in response to feedback provided for your draft document. Marks will be deducted for late submissions, or essays exceeding the specified length.

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Seminar reflection

Due: **29 May (OR 5 Jun)**

Weighting: **25%**

A 10 min PowerPoint presentation will be delivered by each student to the CBMS700 peer group in Week 12 (or 13, if advised prior), highlighting and critiquing one research seminar attended during semester which proved to be of specific personal interest. Your talk will be followed by questions (~10 min) from your audience of academic moderators and fellow students. The class will attend for all presentations.

By exploring relevant background literature beyond the speaker's own publications, you will be expected to demonstrate insight into the concepts and findings presented by the seminar speaker. You will also be required to reflect on the impact the particular piece of research successfully brings to the molecular sciences overall.

Grading of this task will be determined by the critical depth and scientific understanding articulated in your reflection and answers to questions.

On successful completion you will be able to:

- Will have obtained advanced knowledge of molecular science through attendance of a series of research seminars ranging across the discipline
- Practiced a professional level of communication (written, verbal) to articulate cutting-edge achievements and the manner by which key discoveries are made in the molecular sciences

Delivery and Resources

Seminar attendance and critique

Departmental research seminars generally occur in CBMS on selected Tuesdays. Remember to check "...news-and-events/seminar-program" section of the Department's website for updates.

Seminars within formal series sponsored within other University/Medical Research Departments serve as an excellent educational opportunity to become aware of areas of current research focus.

You must obtain record for a total of 10 seminar experiences by June 7. It is your responsibility to retain and collate sign-off on the Unit-approved class sheet as participation record. A printed card will be distributed to all students in Week 1.

Your final presentation in Week 12 (or Week 13) must focus on one selection from the 10 seminar experiences documented on your personal attendance record.

News of seminars on offer around Sydney and of relevance in the molecular sciences will be regularly placed on the iLearn site. You may wish to include seminars held in other university departments or Research Institutes, as well as those formally hosted in the metropolitan area by professional organisations such as Royal Australian Chemical Institute, Joint Microbiological

Associations (JAMS) or the Sydney Protein Group.

Technology essay and viva

As noted within the semester schedule above, once you have selected your technology topic from those offered this year, it is your responsibility to contact and arrange interview and viva times with the relevant supervising academic.

Unit Schedule

This Unit consists of self-directed tasks, with formal classroom experience only occurring in first and last weeks of semester. You will also need to make times available for one-on-one meetings with your designated theme leader, as well as Tuesday lunchtime Research Seminar times.

It is your responsibility to organise your work according to the following schedule:

Week 1-12:

Introductory briefing during Week 1 to outline **Unit organisation**.

Following this, you will attend ~1 research seminar weekly as part of your research training in this Unit. Seminars will most likely be selected from the Molecular Sciences Research Seminar series at Macquarie (Tuesdays, 1pm) as advertised on the Departmental website. However, you are invited to attend other departmental/institutional research seminars that interest you.

Week 2:

A workshop will be held (Wed 6 Mar, 2-3pm) by the University's Science Learning Skills Advisor covering **literature searching and construction of an annotated literature review**.

You will be notified within iLearn of the Breakthrough Technology topics available for review, together with the academic staff theme leader. It is your responsibility to coordinate contact with the supervising academic for direction concerning appropriate reading literature. You must compile a written critical review of background methodology and contemporary applications of this breakthrough technology (as detailed in assessment tasks).

Week 6, mid-semester task (April 3):

4pm deadline for electronic submission of (i) **draft technology essay** and (ii) **annotated literature review** to Unit Convenor (A/Prof. Mabbutt) via Turnitin portal on the iLearn site. Late submissions will be subject to penalty.

Weeks 7-8 viva:

Viva covering your technology topic with designated supervising academic. It is your responsibility to arrange and schedule this interview in advance at a mutually convenient time.

Week 11 (May 22), final review submission:

4pm deadline for electronic submission of **revised technology essay** to Unit Convenor (A/Prof. Mabbutt) via iLearn site. Late submissions will be subject to penalty.

Weeks 12 and 13 May 29 (or Jun 5), peer seminars:

Student **presentations and discussion sessions** will be held within scheduled 3hr workshops both weeks. You must attend and engage on both days. You will be informed of your allocated speaking day / time in advance. Your contribution to peer discussion during these seminar sessions will be graded, as well as your own presentation.

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 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 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

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.

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 outcomes

- Have a familiarity with technology trends developing internationally in contemporary molecular science research
- Practiced a professional level of communication (written, verbal) to articulate cutting-

edge achievements and the manner by which key discoveries are made in the molecular sciences

Assessment tasks

- Seminar attendance portfolio
- Essay (draft)+ viva
- Annotated literature review
- Technology essay (final)
- Seminar reflection

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

- Will have obtained advanced knowledge of molecular science through attendance of a series of research seminars ranging across the discipline
- Have a familiarity with technology trends developing internationally in contemporary molecular science research

Assessment tasks

- Seminar attendance portfolio
- Essay (draft)+ viva
- Technology essay (final)
- Seminar reflection

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

- Have a familiarity with technology trends developing internationally in contemporary molecular science research

- Practiced a professional level of communication (written, verbal) to articulate cutting-edge achievements and the manner by which key discoveries are made in the molecular sciences

Assessment tasks

- Seminar attendance portfolio
- Essay (draft)+ viva
- Annotated literature review
- Technology essay (final)
- Seminar reflection

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 outcome

- Will have obtained advanced knowledge of molecular science through attendance of a series of research seminars ranging across the discipline

Assessment tasks

- Seminar attendance portfolio
- Seminar reflection

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

- Practiced a professional level of communication (written, verbal) to articulate cutting-edge achievements and the manner by which key discoveries are made in the molecular sciences

Assessment tasks

- Essay (draft)+ viva

- Annotated literature review
- Technology essay (final)
- Seminar reflection

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

- Will have obtained advanced knowledge of molecular science through attendance of a series of research seminars ranging across the discipline

Assessment tasks

- Seminar attendance portfolio
- Seminar reflection

Changes from Previous Offering

The weighting of grades for the Annotated literature Review (15%) and Draft Essay/Viva (30%) are slightly altered from 2018 (10% and 35%, respectively). A single topic will be offered by one theme leader, due to the small class.