MOLS7900

Research Frontiers in Chemistry and Biomolecular Sciences

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
Koushik Venkatesan
koushik.venkatesan@mq.edu.au

Credit points
10

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:

ULO1: Communicate components of advanced molecular science knowledge as presented at local research seminars from across the discipline

ULO2: Outline technology trends developing internationally in contemporary molecular science research

ULO3: Articulate in written and oral form cutting-edge achievements across the molecular sciences, and the manner by which key discoveries are made.

General Assessment Information

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.

Assessment Tasks

Name	Weighting	Hurdle	Due
Technology essay (draft) and viva	30%	No	week 6, April 1
Annotated bibliography	15%	No	Week 6, April 1
Technology essay (final)	20%	No	Week 11, May 21
Seminar attendance portfolio	10%	No	week 1 -12
Seminar reflection	25%	No	Week 12 and Week 13 (May 28 or June 4)

Technology essay (draft) and viva

Assessment Type [1]: Essay
Indicative Time on Task [2]: 35 hours
Due: **week 6, April 1**
Weighting: **30%**

You will undertake supervised readings in a high-profile technology currently having breakthrough impact in molecular science.

Following selection of a specific sub-topic of interest, you will prepare an individual essay (~2500 words) 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.

You will be assisted with a workshop on Report Writing, and tutorials with your theme leader.

The draft version of your essay will form the basis for a viva (~20 min) with your academic theme leader. The grade awarded will reflect your demonstrated understanding of the molecular basis underlying the specific technology, and your awareness of the scientific impact and potential.

On successful completion you will be able to:

- Outline technology trends developing internationally in contemporary molecular science research
- Articulate in written and oral form cutting-edge achievements across the molecular sciences, and the manner by which key discoveries are made.

Annotated bibliography

Assessment Type [1]: Annotated bibliography
Indicative Time on Task [2]: 20 hours
Due: **Week 6, April 1**
Weighting: **15%**

You will collate an annotated list (20 - 30 papers) of literature read and analysed to prepare your Technology Essay. Your bibliography should indicate each citation in an appropriate journal style, accompanied by 2-3 sentences summarising the impactful data/findings it reports.

On successful completion you will be able to:

- Outline technology trends developing internationally in contemporary molecular science research
- Articulate in written and oral form cutting-edge achievements across the molecular sciences, and the manner by which key discoveries are made.

Technology essay (final)

Assessment Type [1]: Essay
Indicative Time on Task [2]: 20 hours
Due: **Week 11, May 21**
Weighting: **20%**

This task initiates collaborative writing, as commonly utilised for research reporting . You will re-submit (on time, to a designated length) an improved version of your Technology essay, incorporating feedback from your viva and your draft submission

The grade awarded will reflect the degree to which you made improvements in response to feedback provided from your draft document.

On successful completion you will be able to:

- Outline technology trends developing internationally in contemporary molecular science research
- Articulate in written and oral form cutting-edge achievements across the molecular sciences, and the manner by which key discoveries are made.

Seminar attendance portfolio

Assessment Type [1]: Portfolio
Indicative Time on Task [2]: 15 hours
Due: **week 1 -12**
Weighting: **10%**

Weekly research seminars in the Molecular Sciences Department allow visiting scientists to convey research findings to a peer audience.

You must record attendances at 10 research seminars across semester, each of 1 hr duration.

Your portfolio may include research seminars held elsewhere in the University, or at institutions across the Sydney region.

On successful completion you will be able to:

- Communicate components of advanced molecular science knowledge as presented at local research seminars from across the discipline
- Outline technology trends developing internationally in contemporary molecular science research

Seminar reflection

Assessment Type [1]: Presentation
Indicative Time on Task [2]: 20 hours
Due: **Week 12 and Week 13 (May 28 or June 4)**
Weighting: **25%**

Deliver a short presentation highlighting and critiquing one research seminar selected from your semester portfolio. Your talk will be followed by questions from your academic moderators and fellow students.

By exploring background literature beyond the seminar speakers publications, you will give insight to concepts and findings presented by the speaker. You must also reflect on how this piece of research generally impacts across the molecular sciences.

On successful completion you will be able to:

- Communicate components of advanced molecular science knowledge as presented at local research seminars from across the discipline
- Articulate in written and oral form cutting-edge achievements across the molecular sciences, and the manner by which key discoveries are made.

---

[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

Seminar attendance and critique

Departmental research seminars generally occur in MolSci on selected Tuesdays, although special seminars are often arranged at short notice. Remember to check the Department's website regularly 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 4. 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 at the start of the Unit. 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), Sydney Protein Group, etc.

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 lunch-time Research Seminars.

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

Week 1-12:

An introductory briefing will be held during Week 1 to outline the Unit organisation and to distribute seminar attendance sheets. 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 by the University's Science HDR 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 1):

5pm deadline for electronic submission of (i) draft technology essay and (ii) annotated literature review via the Turnitin portal on the iLearn site. Late submissions will be subject to a 10% penalty per day.

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 21), Final Review Submission:

5pm deadline for electronic submission of revised technology essay via the Turnitin portal on the iLearn site. Late submissions will be subject to a 10% penalty per day.

Weeks 12 and 13 (May 28 or Jun 4), 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://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.