



# CBMS881

## Major Research Project in Molecular Sciences

FY1 Day 2018

*Dept of Chemistry & Biomolecular Sciences*

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#### Disclaimer

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## General Information

Unit convenor and teaching staff

Unit Convenor

Shoba Ranganathan

[shoba.ranganathan@mq.edu.au](mailto:shoba.ranganathan@mq.edu.au)

Contact via Email

F7B-4 Wally's Walk 121

meeting confirmed by email

Co-convenor

Joanne Jamie

[joanne.jamie@mq.edu.au](mailto:joanne.jamie@mq.edu.au)

Contact via Email

F7B-4 Wally's Walk 231

Meeting confirmed by email

Credit points

16

Prerequisites

(Admission to MRadiopharmSc or MBiotech) and (16cp at 800 level or above) and permission by special approval

Corequisites

Co-badged status

Unit description

This unit provides students the opportunity to undertake a research project supervised by leaders in the area of molecular sciences or radiopharmaceutical science. Students will acquire research skills, including literature searching, project planning, experimental design, data analysis and scientific communication. Interested students meeting the eligibility criteria should discuss their research interests with the unit convenor.

## 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:

CBMS881 will enable you to search the literature for publications in your research topic and to critique them

The unit trains you on planning a research project and to identify specific aims and outcomes to be achieved within the stipulated time period. You may require additional training to use specialized laboratory equipment or techniques as required.

You will have the opportunity to apply a systematic and scientific approach to research, and design the experiment addressing the aims of the project.

During the course of your research project or internship project, you will seek to address problems and find scientific solutions.

You will be able to carefully analyse the data collected during your research, using mathematical and statistical tools as required and present these as tables, graphs and figures in your report.

You will report the outcomes of the project carried out as a dissertation or as a manuscript-style report.

You are given the opportunity to present the outcomes of your project as a brief scientific seminar. You can also provide a brief outline of any difficulties that you faced during the project that adversely affected the outcomes.

## General Assessment Information

The CBMS881 Report carries 99% weighting, which is commensurate with a minor thesis at the Masters degree level.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Research Proposal</u>	0%	No	see Timeline
<u>Report</u>	95%	No	see Timeline
<u>Seminar</u>	5%	No	see Timeline

### Research Proposal

Due: **see Timeline**

Weighting: **0%**

This is what you will develop for review with your supervisor.

On successful completion you will be able to:

- CBMS881 will enable you to search the literature for publications in your research topic

and to critique them

- The unit trains you on planning a research project and to identify specific aims and outcomes to be achieved within the stipulated time period. You may require additional training to use specialized laboratory equipment or techniques as required.
- You will have the opportunity to apply a systematic and scientific approach to research, and design the experiment addressing the aims of the project.

## Report

Due: **see Timeline**

Weighting: **95%**

The **CBMS881 report** will be examined by **two examiners** at least one of whom should be external to the university. The **Supervisor** should contact potential examiners for their availability and provide their contact details to the unit coordinator at the beginning of Academic Week 11. The Supervisor will also email the unit coordinator a report of the student's progress, when the report is submitted.

The CBMS881 report can be submitted either as a **dissertation** (*Option 1*) or as a **scientific manuscript** suitable for publication (*Option 2*). Please discuss with your supervisor the most suitable format for your report. Details are available in the **CBMS881 Report** section.

On successful completion you will be able to:

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- You will have the opportunity to apply a systematic and scientific approach to research, and design the experiment addressing the aims of the project.
- During the course of your research project or internship project, you will seek to address problems and find scientific solutions.
- You will be able to carefully analyse the data collected during your research, using mathematical and statistical tools as required and present these as tables, graphs and figures in your report.
- You will report the outcomes of the project carried out as a dissertation or as a manuscript-style report.

## Seminar

Due: **see Timeline**

Weighting: **5%**

A 20-min seminar presentation to the Department will be scheduled during the exam week, to give the student an opportunity to present research aims and outcomes.

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- You will be able to carefully analyse the data collected during your research, using mathematical and statistical tools as required and present these as tables, graphs and figures in your report.
- You will report the outcomes of the project carried out as a dissertation or as a manuscript-style report.
- You are given the opportunity to present the outcomes of your project as a brief scientific seminar. You can also provide a brief outline of any difficulties that you faced during the project that adversely affected the outcomes.

## Delivery and Resources

**Delivery:** This is a full-year unit starting in Semester 1 and finishing in Semester 2, equivalent to least 20 hours of work in a research lab under supervision.

**Resources:** IT facilities available in the research group, Department as well as the library will be available for literature review, word processing and data analysis. Additional facilities, such as access to specialist facilities or the use of specific instruments as required by the project will be organized by the supervisor.

## Unit Schedule

This unit requires at least 40 hours per week of work, in the research lab, under supervision. Normal working hours are Mon-Fri: 9 am - 5 pm. After hours lab work may be required as approved by the supervisor.

Lab safety induction must be undertaken **BEFORE** working in the research labs - contact your supervisor to organize this.

## Learning and Teaching Activities

### Overview

CBMS881 provides research training and skills for students interested in undertaking a research project.

### Research work

You will undertake any safety and/or equipment training courses as required. You will undertake research work of at least 40 hours per week, in the research lab, under supervision. You will have to maintain a lab. book, where daily activities are recorded. You are also required to attend group meetings and/or seminars, as required by the supervisor. At the end of the semester, you are invited to present a short seminar, on the research work undertaken.

### Report writing

The CBMS881 report can be submitted either as a dissertation or as a scientific manuscript suitable for publication. Please discuss the most suitable format for your report with your supervisor. Kindly be aware of the University's policy on information honesty, available from [http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://www.mq.edu.au/policy/docs/academic_honesty/policy.html).

### Seminar

At the end of the semester, you are invited to present a short seminar, on the research work undertaken.

## 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 \(http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](http://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](http://ask.mq.edu.au).

The University declares that it is a ‘fundamental principle’ that “all staff and students act with integrity in the creation, development, application and use of ideas and information. This means that:

- all academic work claimed as original is the work of the author making the claim
- all academic collaborations are acknowledged
- academic work is not falsified in any way
- when the ideas of others are used, these ideas are acknowledged appropriately.

Specifically, the dissertation must be checked with anti-plagiarism software such as Turnitin before submission.

## 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](http://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 outcomes

- CBMS881 will enable you to search the literature for publications in your research topic and to critique them
- The unit trains you on planning a research project and to identify specific aims and outcomes to be achieved within the stipulated time period. You may require additional training to use specialized laboratory equipment or techniques as required.
- You will have the opportunity to apply a systematic and scientific approach to research, and design the experiment addressing the aims of the project.
- During the course of your research project or internship project, you will seek to address problems and find scientific solutions.
- You will be able to carefully analyse the data collected during your research, using mathematical and statistical tools as required and present these as tables, graphs and figures in your report.
- You will report the outcomes of the project carried out as a dissertation or as a manuscript-style report.
- You are given the opportunity to present the outcomes of your project as a brief scientific seminar. You can also provide a brief outline of any difficulties that you faced during the project that adversely affected the outcomes.



## Assessment tasks

- Research Proposal
- Report
- Seminar

## 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

- CBMS881 will enable you to search the literature for publications in your research topic and to critique them
- The unit trains you on planning a research project and to identify specific aims and outcomes to be achieved within the stipulated time period. You may require additional training to use specialized laboratory equipment or techniques as required.
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## Assessment tasks

- Research Proposal
- Report
- Seminar

## 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**

- CBMS881 will enable you to search the literature for publications in your research topic and to critique them
- The unit trains you on planning a research project and to identify specific aims and outcomes to be achieved within the stipulated time period. You may require additional training to use specialized laboratory equipment or techniques as required.
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## **Assessment tasks**

- Research Proposal
- Report
- Seminar

## **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**

- The unit trains you on planning a research project and to identify specific aims and

outcomes to be achieved within the stipulated time period. You may require additional training to use specialized laboratory equipment or techniques as required.

- You will have the opportunity to apply a systematic and scientific approach to research, and design the experiment addressing the aims of the project.
- During the course of your research project or internship project, you will seek to address problems and find scientific solutions.
- You will be able to carefully analyse the data collected during your research, using mathematical and statistical tools as required and present these as tables, graphs and figures in your report.
- You will report the outcomes of the project carried out as a dissertation or as a manuscript-style report.
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## **Assessment tasks**

- Report
- Seminar

## **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 outcomes**

- CBMS881 will enable you to search the literature for publications in your research topic and to critique them
- You will report the outcomes of the project carried out as a dissertation or as a manuscript-style report.
- You are given the opportunity to present the outcomes of your project as a brief scientific seminar. You can also provide a brief outline of any difficulties that you faced during the project that adversely affected the outcomes.

## **Assessment tasks**

- Research Proposal
- Report

- Seminar

## 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 outcomes

- CBMS881 will enable you to search the literature for publications in your research topic and to critique them
- The unit trains you on planning a research project and to identify specific aims and outcomes to be achieved within the stipulated time period. You may require additional training to use specialized laboratory equipment or techniques as required.
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### Assessment tasks

- Report
- Seminar

## Changes from Previous Offering

General Assessment Information and Timeline updated. Also new sections on Report Guidelines and Timeline have been included.

## CBMS881 Report Guidelines

The CBMS881 report can be submitted either as a **dissertation** (*Option 1*), suitable for both a research project (*Option 1.A*) as well as a research internship project (*Option 1.B*); or as a **scientific manuscript** suitable for publication (*Option 2*), suitable for a research project. Please discuss with your supervisor the most suitable format for your report.

**Two typed copies** of the dissertation should be **printed** (A4, two-sided) and **spirally bound or stapled** at the Department of Molecular Sciences and submitted to the unit coordinator. **A softcopy (PDF or MS Word) of the dissertation** should also be **emailed to the unit coordinators**, to facilitate rapid assessment, especially by external examiners.

### General guidelines:

Clarity of expression, presentation of results and their discussion and citation of relevant literature will be taken into account in the assessment. Figures and Tables as required to present your results are essential. Large amounts of data (verifying spectral data, computer programs, etc.) should be placed as Appendices to the dissertation.

The report will normally require considerable effort and should be developed during the course of the semester and completed in the last few weeks prior to submission.

The report should be certified as your own work by the supervisor - scanned signatures may be used.

### **Option 1: Report by Dissertation (a concise thesis)**

Dissertations should not exceed 50 pages of doublespaced text (12 pt in a legible font).

#### **A. Research Project Report**

The following sections must be included in your research dissertation:

1. A **cover page** giving the title of the project, your name and qualifications, followed by a statement on the course details, e.g. "A dissertation submitted in partial fulfilment of the M. .... Degree" (please specify degree here)
2. A 300-word **abstract**
3. **Abbreviation list** specific to your work
4. **Introduction** summarising background literature and the scope of the project
5. **Materials and Methods**
6. **Results & Discussion** (together or as separate sections)
7. **Conclusions**
8. **References** including titles and full author listing of cited papers
9. **Appendix** (optional: max. 20 pages, in addition to the report's 50 pages)

#### **B. Research Internship Report**

The following sections must be included in your research dissertation:

1. A **cover page** giving the title of the project, your name and qualifications, followed by a statement on the course details, e.g. "A dissertation submitted in partial fulfilment of the M. .... Degree" (please specify degree here)
2. A 300-word **abstract**
3. **Abbreviation list** specific to your work
4. **Introduction** summarising the scope of the project
5. **Learning Outcomes**
6. **Self Evaluation**
7. **Appendix: additional materials** (optional: max. 20 pages, in addition to the report's 50 pages)
8. **References** including titles and full author listing of cited papers

### **Option 2: Research Report by Publication-style Manuscript**

This is in the form of a manuscript suitable for submission to a leading international peer-reviewed publication in the area of your project. Your contribution must be sufficient to justify yourself as the first author of the paper, with the supervisor as corresponding author. The report should adhere to the overall guidelines for authors set out by the selected journal. Page restrictions set by the journal can be exceeded, to a maximum of 20%, if justified.

The following sections must be included in your manuscript:

- A **cover page** giving the title of the project, your name and qualifications followed by a statement on the course details, e.g. "A report submitted in partial fulfilment of the M. .... Degree," (please specify degree here) " for submission to ... "(please provide the full name of the journal name here).
- A **manuscript** including the following general sections:
  1. A 300-word **Abstract**
  2. **Abbreviation list** specific to your work
  3. **Introduction** summarising background literature and the scope of the project
  4. **Materials and Methods**
  5. **Results & Discussion** (together or as separate sections)
  6. **Conclusions**
  7. **References** including titles and full author listing of cited papers
  8. **Additional or Supplementary information** (optional: max. 20 pages)

## **Timeline**

**Timeline with reference to FY1:**

	<b>Description</b>	<b>Due on</b>
1.	Project planning	Friday 5 pm, Acad Week 1, Semester 1
2.	Project execution, recording of results, data analysis and dissertation write-up	Acad Weeks 1-13, Semester 1 and Acad Weeks 1-12, Semester 2
3.	Regular meetings with your supervisor	Acad Weeks 1-13, Semester 1 and Acad Weeks 1-12, Semester 2
4.	Dissertation submission (PDF and hardcopy)	Monday 5 pm, Acad Week 13, Semester 2
5.	Seminar (20 mins: 15 mins talk + 5 mins Q&A)	Wednesday, Exam Week 1, Semester 2 - tbc