Faculty of Science and Engineering
Macquarie University

Master of Research Year 2
800-level program guide

January 2018 – October 2018

to be read in conjunction with the Unit Guide for your Discipline-specific 899 course (available in your Department)

FSE MRes Director:
Associate Professor Bridget Mabbutt
A leading program for Research Training

Welcome to the 2\textsuperscript{nd} year of the MRes program in the Faculty of Science & Engineering.

The MRes Year 2 program provides a structured approach to guide you and your supervisor through an individual research project. Your year will incorporate a number of steps and milestones, all designed to directly assist with the initiation and implementation of a successful Higher Degree research project and submission of a well-written thesis.

The Macquarie MRes program has been recognized as leading in the country for delivery of appropriate research training for Higher Degree Research. It is structured so as to meet requirements designated for a Masters Degree (Research) at level 9 of the Australian Qualifications Framework (AQF).

This program guide is intended to explain the general organization and structure of the MRes Year 2. Please consult this document in addition to material that will be provided to you in your home Department by your MRes Advisor. Each discipline has designed a suitable suite of activities about which you will be informed (often on your iLearn 899 site), alongside a specific schedule for these tasks.

Much general information about the general MRes structure can be found on the “Research training” section of the University’s website. For forms and documents related to the management of your candidature and thesis submission, please use:

https://www.mq.edu.au/research/phd-and-research-degrees/research-training/forms-and-documents

For any general administrative matters or problems, please approach your MRes Advisor who can liaise with Faculty HDR staff (headed by Jane Yang) on your behalf.

In this Program Guide, we outline the five major academic Activities that form the Year 2 (800-level) program of your MRes degree, to be undertaken concurrently.

\textit{Activity 1 – Research Frontiers 2 (contributes 10\% of Year 2 mark)}

\textit{Activity 2 – Literature Review}

\textit{Activity 3 – Research Methods}

\textit{Activity 4 – Research Planning}

\textit{Activity 5 – MRes Thesis (contributes 90\% of Year 2 mark)}
Activity 1 – Research Frontiers 2

Goal: To extend candidate’s knowledge of research innovations in their discipline (or sub-discipline).

Relationship to AQF: Candidates will develop a body of knowledge that includes an understanding of recent developments across their chosen field of research.

Tasks: This Activity will allow you to meet and become part of your relevant scientific community, providing context for the research question you are exploring in your project. Each Department coordinates an Activity to cover Research Frontiers 2 (RF2), incorporating experiences and opportunities for their Year 2 group of students. Generally these experiences will build on those of your 700-level Research Frontiers Unit (offered in BPhil/MRes Year 1).

- You will be required to participate in relevant workshops, seminars, journal clubs, etc, held in your Department and across the Sydney region for your discipline peer group.
- You will regularly participate in research meetings with your supervisor and other members of your supervisory team.

Learning outcomes: Candidates will be able to develop their individual research projects in the context of the latest research developments in their field. You will be able to articulate to your peers the research question you have set out to study, and its purpose.

This Activity will allow you to gain an in-depth understanding of research in your selected discipline, including developments beyond Macquarie University.

Outputs: Substantial written output, equivalent to a 3000-word report. While this report is distinct from your thesis document, it will assist you to better shape the Introduction and Conclusion sections you will later include within your thesis.

This is a graded Activity, accounting for 10% of your MRes thesis mark. Your MRes supervisor and other Departmental academics (e.g. MRes/HDR Committee-members) will be involved in marking.

Activity 2 – Literature Review

Goal: Candidates will survey the current literature relating to their individual research project.

Relationship to AQF: Graduates will demonstrate mastery of theoretical knowledge and reflect critically on theory and applications of their selected research area. Candidates will design, use and evaluate appropriate research and research methods.

Tasks:

- Candidates will attend appropriate library training courses and the Faculty Writing Workshop introducing the nature and scope of a formal literature review (e.g. EndNote courses, etc). These workshops are usually scheduled within four weeks of your commencement.
- Candidates will attend Department-specific sessions outlining and discussing discipline-specific approaches to database searching and constructing their literature review.
- Candidates will early on conduct a significant preliminary survey of the literature relevant to their proposed research area.
- Each candidate will participate in regular meetings with their supervisor/s or research teams to review relevant literature and its relationship to their research project.

Learning outcomes: Candidates will be able to situate their individual research project within its broader research context, reviewing associated issues, debates and methodologies. The intention
of this task is for students to master their background literature and begin reading and writing early.

**Outputs:** A draft written literature review (of substantial length, as stipulated by your Department) will be submitted to your supervisor for comment. It is anticipated that a final, corrected, version of this review will be incorporated into your final thesis.

Supervisors will be asked to confirm that they have seen and provided feedback on this draft review. Departments will report a satisfactory/unsatisfactory grade, as confirmation of your completion of this Activity.

**Activity 3 – Research Methods**

**Goal:** Candidates will learn about the latest research methods in their field.

**Relationship to AQF:** Graduates will advance their knowledge of research principles and methods and will design, use and evaluate research and research methods relevant to their research.

**Tasks:**

- Each candidate will attend mandatory Faculty induction workshops.
- Each candidate will attend relevant safety and ethics induction workshops to ensure tasks required for their project are conducted in a safe and professional manner.
- Each candidate will attend several technical training sessions and methods workshops relevant to their research discipline, as stipulated by their Department or research supervisor(s).
- Each candidate will receive on-going tuition and advice regarding appropriate research methodologies, specialist techniques and data analysis methods from their supervisory team.

**Learning outcomes:** Candidates will be fully equipped to make strategic decisions about how to approach their individual research problem.

Each candidate will demonstrate their understanding of research methods, and their capability of using and understanding appropriate research techniques. The intention of this Activity is to skill candidates to determine appropriate methods and correctly interpret and utilise data gathered.

**Outputs:** Departments will confirm candidates have adequately demonstrated their understanding and skills in appropriate research methodologies, and are able to critically analyse their use in comparison with alternative methods. Departments will report a satisfactory/unsatisfactory grade, as confirmation of your completion of this Activity.

**Activity 4 – Research Planning**

**Goal:** Candidates will receive training in project management and plan a major research project.

**Relationship to AQF:** Graduates will have high-level personal autonomy and accountability in research management. They will demonstrate the application of knowledge and skills to plan and execute a substantial piece of research.

**Tasks:**

- Prior to the start of each Year 2 program (i.e. in December or June), candidates will engage in discussion to initiate ideas and planning to formulate an appropriate project with their research supervisor(s).
• Candidates will attend the mandatory Faculty Higher Degree induction and MRes Research Planning workshops. These Faculty workshops are usually scheduled within four weeks of your commencement.

• Candidates will attend relevant Department or University workshops addressing project planning, management strategies and budget accountability.

• Each candidate will work with their supervisor(s) or discipline panel early in their program to produce a detailed written research plan, outlining scope of work for up to 4 years. This plan should outline, step-by-step, the activities and milestones for your MRes project.

**Learning outcomes:** Candidates will develop a major research plan, of up to 4 years scope. A pilot project will be completed during the MRes year.

Candidates will engage in communication of their research plans and budget outlines in written and other forms.

**Outputs:** A research plan will be developed, incorporating: research question, methodology, budget, ethics (if appropriate) and timeline. The plan will be submitted in written form, and (in some Departments) additionally as a seminar presentation.

Departments will report a satisfactory/unsatisfactory grade, as confirmation of your completion of this Activity.

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**Activity 5 – MRes Thesis**

**Goal:** Candidates will complete a significant individual research project of their own design.

**Relationship to AQF:** Graduates will demonstrate the application of knowledge and skills to plan and execute a substantial piece of research and show creativity and initiative. Candidates will investigate, analyse and synthesise complex information, problems, concepts and theories. They will generate and evaluate complex ideas and concepts at an abstract level, and present a coherent and sustained argument.

Graduates will demonstrate capability to design, evaluate, implement, analyse, theorise and disseminate research.

**Task:** Candidates will complete an individual research project, incorporating all listed Activities and culminating in a single coherent thesis.

**Learning outcomes:** Candidates will complete a research project in order to demonstrate individual research capability and the potential to conduct a major (PhD-scale) research project.

**Output:** Candidates will complete a substantial thesis subject to disciplinary standards (worth 90% of the MRes mark).

The thesis will be examined externally by two examiners (out of three potential examiners nominated by your supervisor). Under no circumstances are candidates or supervisors to have any contact with examiners, either in person or by any other means, between the time examiners are appointed and the time the candidate’s result is decided.

**Your MRes thesis will be due October 11th, 2018, unless you have been informed of a later submission date.**

*Note: a late penalty of one mark / calendar day beyond your EWS deadline will be applied, and deducted from your final MRes grade.*
Each student’s specific thesis submission date is the designated EWS date indicated on the Research Student Profile sent to you by the University’s Higher Degree Research Office (along with your enrolment and registration advice letters). Time extensions may be appropriate in cases of illness or misadventure, with permission from your supervisor and MRes Advisor.

**MRes thesis format in the Faculty of Science and Engineering**

MRes thesis formatting appropriate to research in the Faculty of Science and Engineering is stipulated as follows. This formatting (which takes into account the need for illustrative content) also fulfills the general guidelines for all Macquarie University MRes theses.

The MRes thesis in FSE must contain these sections, (i) title pages, (ii) abstract, (iii) text, (iv) references, (v) supplementary material; concatenated into one PDF for electronic submission.

(i) Title page, listing full thesis title (max. 12 words), candidate's name, name of Department, date of submission. Do not include logos or names of funding bodies on this page.

A statement, signed by the candidate, to the effect that the work has not been submitted for a higher degree to any other university or institution. The candidate shall also quote Ethics Committee approval details (i.e. protocol number).

(ii) Abstract, limited to 200 words;

(iii) Text, not to exceed 50 pages printed out in 12 pt font, 1.5-spaced text, with 2 cm margins (or equivalent). All pages (A4) to be numbered consecutively;

(iv) References in 12 pt font, single-spaced;

(v) Optional: supplementary material, not to exceed 12 pages. May include tabulated data, spectra, sample images, but not additional block text. Access to additional digital supplementary material is permitted, via links at the end of the thesis document to accessible files (examiners can access embedded web links in your final PDF).

**Submitting your thesis**

All required Activities 1, 2, 3 and 4 (tasks as detailed in both this and your Department guides) must be deemed Satisfactory before your MRes thesis can be accepted by the University.


Unless one of your examiners specifically requests a hard copy, your thesis will be disseminated for examination in electronic (pdf) format. Close to thesis submission time, details will be sent to you by our Faculty’s Higher Degree Research office about required forms and instructions for file uploads. These forms will require signatures from your supervisor and MRes Advisor *(who signs on behalf of your Head of Department)*.

Your thesis and submission documents will be checked and certified by the Faculty MRes Director, who ensures that they conform to university regulations and Faculty formatting guidelines. Should your thesis not be in compliance, it will be returned to you for corrections and the late penalty will apply.
Grading of your MRes thesis

The University’s grading criteria issued to examiners for marking of your MRes thesis (from www.mq.edu.au/research/phd-and-research-degrees/research-training/forms-and-documents) is extracted below.

Grade band 85–100%
A thesis at this level:
- Clearly and fully outlines its research topic and objectives, explaining and justifying the project in relation to key developments in the field and recent literature;
- Clearly and fully outlines and explains the research undertaken, in terms of the methodology chosen and why it was chosen in preference to alternatives;
- Draws clear and fully-supported conclusions from the research that allow for critical reflection on the research question, the current status of related research and possible future directions for research;
- Is clearly and cogently structured and well-written, and conforms to disciplinary conventions in terms of its presentation;

A candidate producing work of this quality is capable of going on to original and innovative research and is strongly suited for enrolment in PhD.

Grade band 75–84%
A thesis at this level:
- Provides a good account of the research objectives in relation to developments in the field and recent literature;
- Explains the research undertaken and why a certain methodology was chosen as appropriate;
- Draws conclusions that are broadly supported by the research, and that respond clearly to the research question;
- Is clearly structured and written, and conforms to disciplinary conventions in terms of its presentation.

A candidate producing work of this quality is capable of undertaking a PhD.

Grade band 65–74%
A thesis at this level:
- Has a clear research objective informed by developments in the field and recent literature;
- Explains its methodology clearly;
- Relates its conclusions clearly to the research undertaken;
- Is adequately written, structured and presented.

A candidate working at this level is capable of higher degree research, but not yet at doctoral level.

Grade band 50-64%
A thesis at this level:
- Identifies its research objective;
- Has a clear methodology;
- Draws conclusions based on the research undertaken;
- Is written and presented adequately.
A student working at this level is not capable of further higher degree research.

Grade band below 50%
The thesis does not meet the standard for the award of the degree.

Enquiries and HDR student support for Faculty of Science and Engineering

For all student enquiries, please first contact your MRes Advisor or the Faculty HDR Team:
sci.hradm@mq.edu.au

Early in your program, you will be invited to induction sessions coordinated by both University and Faculty Higher Degree Research offices. At these sessions, you will be provided with specific information concerning general support (learning skills, IT, and others) available to you as a Higher Degree student at Macquarie University.

Macquarie University Code for the Responsible Conduct of Research

The Macquarie University Code for the Responsible Conduct of Research (The Macquarie Code) outlines standards of responsible and ethical conduct expected of all persons engaged in research under the auspices of Macquarie University. The University has developed this Code to meet the standards set out in the Australian Code for the Responsible Conduct of Research (2007).

The conduct of all Macquarie University research must adhere to The Macquarie Code irrespective of its funding source or whether it requires ethical review.

Policies and Procedures for HDR candidates

Macquarie University policies and procedures are accessible from Policy Central, with several specific to Higher Degree Research candidature: http://www.mq.edu.au/policy/category.html#hdr

HDR candidates should also be aware of policies for all students of the University:

- Macquarie University Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Supporting You and Your Research

Your well-being matters to us, and some find the MRes year particularly challenging. Macquarie University provides a range of general student support services (http://students.mq.edu.au/support/), including some specifically for our Higher Degree Research candidates. For details, visit https://students.mq.edu.au/study/my-research-program/training-support-and-tools/learning-skills.