

# Advice for MSc/MA thesis writing: for Students and Supervisors

Warren B. Moors (Mathematics Department MSc/MA Advisor)

## Abstract

The purpose of this document is to advise students and supervisors of the expectations of the following Masters theses:

- 120 point Masters Thesis in Mathematics or Applied Mathematics. This is the product of a one year full-time research project, or part-time equivalent.
- 90 point Research portfolio in Mathematics. This is the product of a one-year 3/4-time research project, or part-time equivalent.

## 1 The Masters thesis at Auckland

From the (2013) University of Auckland Postgraduate Prospectus (page 23).

A research masters provides the opportunity to develop advanced research skills and to present findings in documented scholarly form (such as a thesis). Your research should make an independent contribution to learning or offer a critical perspective on existing scholarship or methodology.

## 2 The Masters examination process

There are two examiners for each thesis, at least one of whom must be external to the University of Auckland. No-one in the supervisory team is permitted to be an examiner.

### 2.1 Role of Examiners

Each examiner will provide a recommended grade and/or mark accompanied by a full report that includes justification for the recommended grade. Examiners' reports must be written independently and there should be no contact between the examiners, including any discussion intended to produce agreement on a final grade. The only exception is in cases of disputed results. In cases of disputed results, contact between the examiners will be initiated by the Academic Head (or acting Head) after the submission of the reports. In all cases, the examiners' reports will be provided in confidence to the supervisor, who may provide confidential comment on them in writing (within one week) to the Examination Committee.

### 2.2 Role of the Examination Committee

After receiving the reports and recommended grades from the examiners and any written comment from the supervisor, the Examination Committee should recommend a final grade for the work examined to the Academic Head (or acting Head). No person involved in the supervision of the work under examination, or the Academic Head (or acting Head), should participate in the committee's discussion or decision. The recommended grade should be based on the examiners' reports and may be informed by the supervisor's comment.

## 2.3 Grades

The grading system used by the University of Auckland is a range from A+ to D- (with maximum grade A+). Masters degrees can be awarded with honours.

Grades	Honours
A+ A A-	1st class Honours
B+	2nd class Honours, 1st division
B B-	2nd class Honours, 2nd division
C+ C C-	No class of Honours
D+ D D-	Fail

## 3 Examiner's Report

The examiners of your thesis will most likely take into account the following considerations.

### 1. Length of the thesis

There are no hard and fast rules as to the length of a thesis. A really long thesis of poor quality may still fail while a short thesis of exceptionally high standard, containing new significant results, may receive first class honours. However, as a general rule of thumb, I would usually expect a 120 point thesis to be around 60-120 pages in length and a 90 point research portfolio to be around 45-90 pages.

### 2. Knowledge of subject

- (a) What is the subject area of the thesis, and what problem/question is it about? Has the student clearly stated this? Has the student indicated how this subject area is situated in a wider context?
- (b) Has the student identified the relevant literature? It is expected that a thesis will provide evidence of a reasonable depth and breadth of knowledge of the relevant literature. This will usually be demonstrated by reference to a significant number of published papers (usually at least 10).
- (c) Has the student shown that they have read the literature carefully, critically and thoroughly?
- (d) Does the thesis provide evidence that the student has achieved a mastery of very advanced or theoretically sophisticated subject matter? (Keep in mind here the distinction between the 120 point Masters Thesis and the 90 point Research Portfolio.)

A grade in the A-range for this component will usually require strongly positive answers to all questions, though the interpretation of "theoretically sophisticated subject matter" will depend on the subject area and the specific research project. Moderate omissions of literature and/or minor misunderstandings of the subject material will usually lead to a grade in the B-range for this component. Serious omissions of literature and/or major misunderstandings of the subject will lead to grades in the C-range or lower.

### 3. Originality, interpretation and analysis

- (a) What does the student actually do in the thesis? Has the student clearly stated this?
- (b) Has the student designed and carried-out a well-structured, relevant and integrated plan of research?
- (c) Has the student analysed, argued and reached conclusions that are informed by independent inquiry and other available information?
- (d) Has the student made an original contribution? Does the thesis provide evidence that the student has a capacity for creativity and originality?

A grade in the A-range for this component will usually require strongly positive answers to all questions, though the interpretation of “original contribution” will depend on the subject area and the specific research project. In certain branches of Pure Mathematics it will not be expected that any original contribution will be made, while in certain branches of Applied Mathematics it will be impossible to get an A-grade for this component without some original content. Grades in the B-range will be given if there are significant (but not serious) flaws in methodology and/or the conclusions are weak and/or the arguments are not fully supported. Serious flaws in methodology, failure to draw conclusions, lack of analysis will lead to grades in the C-range or lower.

### 4. Organisation of material

- (a) Does the thesis explain the topic well?
- (b) Is the thesis structured in a logical and coherent way?
- (c) Is appropriate background to the subject given?
- (d) Are examples, graphs, figures etc well-chosen and helpful?

### 5. Style and presentation

- (a) Is the thesis written in the accepted style of the subject?
- (b) Are the typesetting, graphs, figures etc of a professional standard?
- (c) Is the referencing adequate? Is the bibliography of a professional standard?
- (d) Are there relatively few typographical errors?

Positive answers, or very minor flaws, for all questions would result in a A-grade for this component. Positive answers to only some of the questions, or moderate flaws, would result in a B-grade for this component. Major flaws for most of the questions would lead to C-grades or lower for this component.

## 3.1 Final grade ranges

An overall grade in the A-range (i.e., first class honours) will only be given to a student who has demonstrated at least one of:

1. A mastery of very advanced or theoretically sophisticated subject matter.
2. An original contribution to the subject (keeping in mind what is reasonable for this level of student and this topic).
3. Conclusions, supported by a high quality of analysis and argument, and reached by independent inquiry and other available information.

An A+ grade will normally require an original research contribution.

Overall grades in the B-range will be awarded to a thesis that is of good quality, but that does not achieve excellence in either knowledge of the subject or originality/interpretation/analysis. Grades in the C-range, or below, will be awarded to a thesis that fails to achieve a high standard for the majority of the criteria.

Note that the minimum grade for entry into the University of Auckland PhD programme is B+, and that to obtain a University of Auckland PhD scholarship it would usually be necessary to have an A or A+ grade.

### **3.2 Grading of the 90-point research portfolio**

The 90 point research portfolio is to be marked using the same criteria and weighting as above. However, since this project is the outcome of three-quarters the effort of a Masters thesis, the expectations about the scale and ambition of it are lower. Nevertheless, first class honours will still require that the portfolio demonstrates at least one of the three bullet points in the previous section (i.e., mastery of very advanced subject matter; an original contribution; high quality of analysis and argument) and an A+ grade will still require an original research contribution.