



## Masters or PhD?

All students start their research degrees in the same way: find a supervisor, select a research topic, and start our [graduate coursework](#). However, in the long term there is a very big difference between these two degrees, and its not just how long it takes to do them. The biggest difference is how much original research contribution is required, which, in the case of a PhD, has to be significant. It is difficult to give a precise, quantitative measure of what is required, as quality is such an important factor, but a reasonable expectation for a PhD is that several high quality international journal publications will be produced over the course of three and one half years of study. A masters degree involves a small amount of original research, publishable in international conferences, but the main part of the thesis is a demonstration of mastery of the field, placing the research in the context of a thorough review of the literature. This must also be done in the PhD thesis, but the original content is far greater. Our graduate programs also involve [coursework](#).

Given the requirements are so different, it is important that you and your supervisor have a clear idea, right from the start, what the end goal is: Masters or PhD. However, at an administrative level, it makes no difference what your initial enrollment is. In fact, almost all our graduate students are first admitted to the Masters degree program, whether or not they wish to finish up with a PhD degree. The usual route to a PhD is via initial enrollment in the Masters degree program, followed by [conversion](#) to PhD enrollment after about one year.

It is possible to enroll directly in our PhD program, at our discretion, but we only offer this if you already have a research masters degree. After one probationary year in this program there is a [confirmation process](#) that is just as rigorous as the conversion process. The only difference is that if you fail confirmation, it is a more difficult administrative procedure to re-enrol in a Masters, if that is the appropriate decision to be made. We prefer not to have students feeling that they have failed, and nor do we want our masters degree to be seen as an option for failed PhD candidates, yet there is a significant difference in the level of research required between these two degrees which must be maintained. It is for this reason that we enroll students in the masters program initially, but encourage students to aspire to PhD level. At the same time, we recognize that some of our best students want to do the Masters degree, which takes less time, and has less emphasis on pure research. We expect the same quality, but the goals are different.

During your candidature as a research student, you will need to report on your work and present seminars. Your main point of contact during your studies is your supervisor, but

during annual progress meetings and confirmation/conversion meetings you will also meet with your progress committee. Your supervisor's responsibility is to choose the members of your committee, but it is in your interest to make sure this gets done as quickly as possible: these are people to whom you can also seek advice on matters concerning your candidature and progress.

## **Graduate coursework**

Students admitted to either degree must do graduate level coursework. PhD students need to pass at least four of our advanced subjects, and Masters students need to pass at least two. The [confirmation/conversion process](#) for the PhD will involve looking at not just how well you are doing in research, but also your performance in these subjects.

There are two aims in providing this coursework. One is to provide advanced training and techniques to help students to quickly get to the cutting-edge of their research area. The other is to provide breadth, so that graduates get exposed to research areas beyond that of their own thesis. Students need to be able to demonstrate in the final [pre-submission meeting](#) that they have a broader background than the narrow confines of their thesis, and this coursework helps to achieve this outcome.

It is possible in some cases to replace one of the advanced subject requirements with a subject from another discipline, if required. This will be decided on a case by case basis.

## **Annual Progress Report Meetings**

Every year of the candidature, the committee meets to review the progress of the candidate. In all these meetings the candidate will be required to demonstrate ability for independent research, knowledge of the state of the art in his/her field of research, as well as good presentation skills. These annual meetings provide an opportunity for both student and supervisor to review and evaluate progress on the project, and can alert the head of department and the Chair of the Research Higher Degree (RHD) Committee, of any difficulties in candidature. A week before any such meeting, the candidate must submit a Progress Report according to the guidelines in [Progress Report](#). The progress report helps the committee to evaluate the performance and the progress of the student, and it helps the student to record his/her work as he/she progresses. It is always beneficial to start writing the thesis from day one. Writing progress reports along the way makes it easier for the student to produce his/her thesis. For the final [pre-submission](#) meeting for Masters and PhD, the report will be the actual thesis.

Before the meeting, the candidate must also give a presentation of high quality (see [presentations](#)). During the meeting, which typically takes around 60 minutes, the candidate will answer questions supplied by committee members. In his/her answers the

candidate will have to demonstrate the expertise and skills required for his/her relevant stage and his/her relevant degree (Master or PhD).

The candidate should bring the progress report form to the meeting. At the end of the meeting, the committee will evaluate and discuss the performance of the candidate and will complete the progress report form. The candidate should read the supervisor's comments and is required to sign after completion of the supervisor's section of the form.

The possible outcomes of these meetings are: (1) the committee report on satisfactory progress, or (2) the committee report on unsatisfactory progress. In the latter case, the committee reports to the Head of Department highlighting problems and suggesting actions to resolve the problems.

For the final (pre-submission) meeting, the outcome is advice to the student on whether or not to submit the thesis for examination, and, in the latter case, on what steps are required to improve it.

### **PhD confirmation/conversion meetings**

The most important annual progress report meetings are the PhD conversion or PhD confirmation meetings. These meetings are challenging hurdles and their outcomes include and go beyond the outcomes of the other progress meetings.

At a conversion meeting, applicable to Masters students aiming to convert to PhD, possible outcomes are: (1) successful conversion to a PhD, (2) continuation in the Master program, or (3) a recommendation that the candidacy of the candidate be terminated. As in regular progress meetings, the committee may report on unsatisfactory progress, highlighting problems and suggesting actions to resolve the problems.

At a PhD confirmation meeting, possible outcomes are: (1) a recommendation that the candidate is confirmed as a PhD student, (2) a recommendation that the PhD probationary candidature is extended to a specified date, up to a limit of one year and six months after commencement, or (3) a recommendation that the candidacy of the student be terminated.

In either case, the purpose of the meeting is to decide if the candidate has the ability to go on to produce the level of original research required for the PhD degree. The committee needs to see evidence of original thinking, and also that the candidate has sufficient technical background to work at this level. To this end, results in the advanced subject course-work will be considered, and chances of conversion/confirmation are enhanced if excellent results have been obtained in at least two such subjects, rather than just bare passes.

There is no difference between the standards required for confirmation and for conversion. It may look like there is more flexibility with a probationary PhD, with respect to outcomes of the meeting, but in practice, the conversion meeting can be

delayed the same amount as the confirmation meeting, if need be. This still leaves enough time for a Masters thesis to be written up if the candidate is deemed to be working satisfactorily at a Masters level, but not at the PhD level, in terms of the research requirements.

## **Pre-submission meetings**

As already discussed, there is always a final meeting of candidate and committee before submission of the Masters or PhD thesis. In both cases, the candidate needs to demonstrate to the committee that he/she is ready to submit the thesis, and a further delay before submission may possibly be recommended by the committee.

In the case of a PhD, the candidate must be able to demonstrate that he/she has made sufficient original contribution to research to justify the awarding of a PhD. In either case, Masters or PhD, the candidate must be able to demonstrate a mastery of the particular field of endeavour, and, beyond that, basic knowledge that the committee deems to be necessary for the candidate to know on completion of the degree. If the committee is not satisfied with any aspects of this meeting, the candidate is advised not to submit the thesis, and to address the relevant points, before another meeting takes place.

The outcome from the pre-submission meeting is a recommendation that the candidate submit the thesis. The thesis is then examined by independent experts from outside the university, and the chairperson of examiners makes the final decision on the awarding of the relevant degree, based on the examiners' reports.

## **The Progress Report**

The candidate must submit, to all committee members, a week before the meeting, a comprehensive report.

For final (pre-submission) meeting for Masters and PhD, the report will be the actual thesis. Otherwise, the report will include all results achieved so far, and current plans for the future. The plans at each stage of the candidature are not cast in iron, and they can change as the research progresses. However, at each stage, the candidate must have a clear plan. As the candidate progresses, the research results reported will increase, and the planning section will reduce, until the thesis is completed. The thesis should still indicate directions for further research.

The report should include the following:

- (1) Clear definition of the problem or problems the candidate is trying to solve;
- (2) Motivation - why the problem(s) are important;
- (3) Literature Survey - a comprehensive description of all work done related to the candidate's research problem. The survey should cover the archival technical literature. It must cover INSPEC (IEEE) -type journals; a web search is not enough. The research

problem must be placed in the context of prior work, including an explanation as to how it goes beyond what has been achieved by others.

(4) Research results - preferably copies of publications or of papers submitted for publication. Naturally, the amount of original research work required depends on the degree, and on the time spent so far.

(5) Future plan - this should include ideas, methodologies, or experiments that the candidate plans to use or perform in order to solve his/her research problems. It should also include time-lines e.g. a Gant chart, showing that the candidate has thought through the future plan, to the extent that it is realistic in the time-frame available.

(6) A 2-3 page summary of the above. This summary will be sent to the school of graduate studies (SGS).

For students in their PhD conversion or confirmation meeting, at least one refereed conference or journal paper (or equivalent) is required, as well as evidence of original thought to the level required in PhD research.

## **Presentations**

It is expected that every Master by Research or PhD student give a presentation at least once a year. We provide here guidelines for good presentations.

Consider the background of your audience, and make sure sufficient background is provided: the audience may not be from your research area. Even if they are, they may know less than you think! Remember that you have been thinking about your research problem for some time, whereas your audience is trying to understand the problem from scratch. Think about what they really need to know, and make that the priority. Consider the time allotted for the presentation, pace yourself, and allow time for questions.

Make sure that you clarify the distinction between prior knowledge and your contribution. Start with a description of the state of the art, and then define and emphasize your own contribution. As it is your main objective, describe your contribution in general terms early in your talk.

The most important part of your presentation is answering questions and interacting with the audience. Your talk has been a success if it provokes discussion, and you should leave ample time for that: at least five minutes in a fifty minute presentation, and preferably longer than that; perhaps aim to talk for 40 minutes, allowing up to 10 minutes for questions and discussion. Do not fear questions, and think that people are trying to find out your weak points. In fact, the thing you will learn over the course of your graduate program is that people typically know much less than you think, and they need your help to understand things. When you get a question, put yourself in the questioner's shoes, and try and understand what they are asking. What is the background of the questioner (if known)? Are they misunderstanding something you've said? Have you not been clear, and can you clarify things for the audience in general? On the other hand, they may have

new ideas or suggestions, and if so, that is a good outcome from the presentation. Try not to be nervous about this process.

*Pointers about questions:*

It is good practice to repeat the question. This gives you time to think about the answer and it guarantees that the audience knows the question that is being asked. Then take a breath and think about how best to answer the question.

If you don't understand the question, ask the questioner for clarification; there is nothing more frustrating than to hear a questioner misunderstand a speaker, and then the speaker misunderstand the questioner, and so on, but it often happens! If you don't know the answer to the question, then say so, and try and remember it.

If the question is not of interest to most of the audience you can offer to discuss it later in private. In most cases, wait until the questioner completes his/her question unless the question is too long - use your judgment on that. You must answer questions during the talk which help you clarify your presentation, and such questions are to be encouraged.

It is very important to think in advance of problems or questions that the audience may have, and to answer these questions in your talk before the questions arise. Feedback from a dry run audience can help considerably. We encourage practice talks, but not rote memorization of what you are going to say. Try and be spontaneous!

*Additional pointers about presentation:*

Use a good Computer presentation program (e.g. PowerPoint). Use big letters on your slides. Make sure that the people sitting in the last row can read your slides clearly. All graphs must have a label, unit, and numbers on each axis. The comment about lettering size applies to labels, units, and numbers on axes of graphs. Keep the numbers of words per slide small by eliminating unnecessary words, but make sure that all key words are on the slides. Use dot points. Given the importance of a small number of words per slide, dot points do not have to be complete sentences.

Use pictures or diagrams instead of words whenever possible. You must proof-read your visuals. However, if you discover a typo during your presentation, correct it there and then and go on. This often happens in spite of one's best intentions.

Make sure well before your presentation that the multimedia technology you need in your presentation is available in your lecture theatre.

It is important during the talk to point to words and diagrams on your slide. Use a long pointer supplied in the lecture theatre, or a laser pointer. While pointing at your slide is important, it is also very important to maintain eye contact with your audience. Do not just read off your slides.

Use short jargon-free sentences. Arrange the talk in a logical sequence. Mention the important points first. Audiences tend to remember better what you say in the beginning

of your talk. Focus your talk on essential points and ideas and do not necessarily spend much time on detail. Most importantly, enjoy your presentation! People are not there to find weaknesses, but to learn from you, and everyone enjoys an enthusiastic presenter.