

Data & Computational Science

MSc Research Project and Thesis Guidelines

This document gives guidelines for research projects by students taking the MSc in Data & Computational Science at University College Dublin.

Overview of the Research Project

The research project is worth a total of 30 credits (i.e. the same as a full semester consisting of 6 modules) and the effort put in should reflect that fact. It will primarily be completed during Term 3, which runs from 21st May to 2nd September 2018. Students may start early, but must submit their thesis no later than **4pm on 31st August 2018**.

Scope of the Project

The project should be a piece of individual research. The topic to be researched must be clearly identified and agreed with a supervisor prior to starting the project. The analysis of the research topic should be directed by a clearly defined research question, an objective which in turn is achieved by satisfying clearly stated, achievable, specific objectives.

Topic Selection

Students will be provided with a list of available supervisors and research areas from which they should select their top 3 choices in order of preference. In exceptional circumstances students may propose their own project; to do so they must identify a suitable and willing supervisor, and receive prior approval from the module coordinator. In either case, they should submit a proposal in the form of a 1-page mini-CV plus a brief (300 word) cover letter and list of topic preferences by **9th March 2018**.

Multiple students may choose the same topic and students are encouraged to work in groups, discussing common issues. However, ultimately each student will be assessed independently and the thesis and presentation should be entirely their own work.

Student proposals will be reviewed and students will be offered a project from one of their three preferences. They will then have the opportunity to discuss the project with their supervisor, and must then communicate the finalised title and supervisor of their project to the module coordinator (Dr. Barry Wardell <barry.wardell@ucd.ie>) by **25th March 2018**.

Nature and Extent of Supervisor Assistance

The Supervisor is expected to provide assistance at two stages in the process.

During stage one, supervisors should ensure that the topic area selected by students provides a valuable and relevant learning experience.

During the second stage — namely the review of the student's work in progress — students will meet with supervisors for ~1 hour per week (allowing some flexibility to account for holidays, etc.). The earlier meetings should consist of interim reviews and the latter ones should be used for a review of the final draft of the thesis and to prepare for the presentation. Assistance above and beyond this level of intervention is entirely at the discretion of the supervisor.

In the case of group projects — where multiple students are working in the same area with the same supervisor — it may be appropriate for the meetings to be group-based, with students gathering in advance to prepare and discuss issues among themselves.

Minor thesis

Preparation of the minor thesis

The following are some guidelines for preparing the minor thesis:

- The thesis should be approximately 7,000 (maximum 10,000) words excluding figures, tables, references, and computer code.
- The thesis should be printed on one side of A4 paper with a left-hand margin of 30mm. Other margins should be not less than 20mm. One-and-a-half line spacing should be used, with the exception of indented quotations and footnotes, where single spacing may be used.
- Pages should be numbered consecutively throughout the substantive text of the thesis, including appendices. Prefacing pages should also be numbered consecutively, but utilising the Roman numeral format (i, ii, iii, iv, v, etc.). Page numbers should be right justified at the bottom of the page.
- The title page should describe the content of the thesis accurately and concisely. It should give the following information in the order listed:
 - The full title of the thesis and subtitle, if any.
 - The full name of the author (followed, if desired, by any qualifications).
 - That "The thesis is submitted to University College Dublin in part fulfilment of the requirements for the degree of Master of Data & Computational Science".
 - The School(s) in which the research was conducted. This should be the School of Mathematics and Statistics, plus any other School in which the project supervisor may be located.
 - The name of the supervisor of the research.
 - The month and year of submission.
- The cover should contain the following:
 - The UCD crest
 - Your degree (MSc. Data & Computational Science)
 - The full title of the thesis and subtitle, if any
 - The name of the author
 - The student number of the author
 - The project supervisor's name
 - The month and year of submission
- Relevant computer output must be included (both electronically and in an appendix).
- Computer programs, data etc should be in an appendix.
- The thesis should be prepared using LaTeX. A template for this will be provided.
- The following format is highly recommended:
 - Title page
 - Table of Contents
 - List of Figures
 - List of Tables
 - Abstract (approx 300 words)
 - Introduction
 - Theory and methods
 - Results
 - Discussion and conclusions
 - References
 - Appendices
 - Code listings

Submitting the Thesis

It is unwise to submit without the supervisor having read at least an advanced draft of the dissertation. Ideally, the student should have at least one meeting with their supervisor at this stage. But please remember that members of staff are entitled to take a holiday in the summer, and they may not be able to read your draft chapters at the drop of a hat. You must arrange with your supervisor the date when you plan to ask him/her to read your draft dissertation. You should allow two weeks from giving in the draft.

The internal deadline for submitting the thesis is **4pm on Wednesday, 15th August 2018**. This will allow time for preparation of the talk and for dealing with any issues that arise ahead of the strict UCD submission deadline of 4pm on Wednesday, 31st August 2018.

The following are required to complete submission:

1. Two soft bound copies of the thesis should be submitted to the School of Mathematics and Statistics office before this deadline.
2. Two copies of the “Graduate Minor Thesis Submission Form” (available from the UCD assessment website) must also be completed and submitted with the soft bound copies of the thesis.
3. A PDF of the thesis (and any support material and/or code) should be emailed to Dr. Barry Wardell <barry.wardell@ucd.ie> before the submission deadline.

Presentations

Students will be given the opportunity to present their research in a 12 minute individual talk. The talk will be attended by academic staff and other students in the MSc programme. The presentation will contribute 20% to the overall grade for the research project.

Assessment

The thesis will be graded in accordance with the “UCD Module Grade Descriptors” included in the UCD Grading Guide. The following criteria will be taken into account:

- Knowledge of the subject/issue;
- Quality of the work;
- Progress (taking into account level of difficulty);
- Use of explanation and summarisation;
- Reference to relevant and current literature (including peer-reviewed journal articles, books, and other resources);
- Contribution to knowledge of the subject;
- Analysis and synthesis;
- Evaluation/Recommendations from supervisors;
- Level of critical thinking;
- Objectivity;
- Literary Style;
- Presentation;
- Quality of writing;
- Final presentation;
- A demonstration of having achieved the learning outcomes of the MSc degree.