

# Project writing and marking guide

## ECMM705 MMath project

### Overview

The MMath project is worth 30 credits, with a duration over the autumn and spring terms, hence a substantial amount of work is required.

The project is done over the first two terms, with (on average) weekly guidance from the supervisor. By the end of the first term, students should at least have a clear idea of the aims of the project and the main concepts and methods needed, and should have familiarised themselves with the relevant literature. The remaining work on the project will then be done over the winter break and spring term. The dissertation will need to be submitted in the Easter break. If students require the supervisor to read a draft of the project (for purposes of feedback), then they should allow at least two weeks before submission deadline.

The project report should normally be no more than 50 pages, but a report of about 30 pages (excluding appendices) would usually be appropriate. The report should describe the topic and general context of the project, describe the methodology, present and discuss the main findings. Students should discuss the detailed content of their report with their supervisor. Typical things to put into an appendix include: technical calculations (e. g. complicated algebraic proofs), very large tables of results, graphs and statistical analyses (if too many to fit into the main body), and computer codes (all significant codes written as part of the project should be placed in appendices and commented so that examiners can follow the thinking, structure and understand the variables/loops used).

Students will also have a viva attended by the supervisor and a second marker, where they will present and defend their project research.

### Assessment criteria

90% of the marks are given for the written report, while 10% of the marks come from the viva.

**Guidelines for marking the written report.** The following split is suggested for the written report (out of 100).

- *Introduction/description of project aims/background to the topic (10%).* This includes a discussion of the scope of the main articles studied, and how these articles relate to other research methodologies/approaches. E. g., how do the assumptions/methods used in article X compare to those used in article Y? What is the main objective of the project? Is it to prove a result, test a hypothesis, or develop techniques to solve a particular problem? If developing a model, what are the key assumptions/limitations?
- *Exposition of methods to be used, underlying theory, detailed review of literature on which project is based, etc. (40%).* Appropriate description and use of methodology. Results: analytic calculations, numerical calculations, analysis including figures and tables.
- *Student's own calculations, computations, results etc., and discussion of conclusions (30%).* Are you trying to reproduce or derive a result stated in the literature? Are you trying to extend a result that was derived in the literature? (e. g. perhaps by relaxing some assumptions). How sensitive are your results to the method used / assumptions

made? How do your results relate to those in the literature, which may use different methods? How would you extend your project given more time?

- *Structure and presentation. Clarity of English, presentation of figures, explanation of terminology and notation, etc. (20%).* Your project should not be a list of unexplained (cut/paste) equations, code and quoted paragraphs from cited articles. You need to explain all your steps carefully (e. g. imagine you are going to explain this material to someone else, who is at a similar (mathematical) academic level, perhaps a future employer).

The viva will be assessed against similar criteria as well as on the quality of the responses to questions from the jury.

Given the broad variety of subject areas in the department ranging from pure mathematics, to applied mathematics, to statistics and climate science the weight of the various assessment criteria may vary slightly for different subject areas. If in doubt students should discuss with their supervisor what makes a good project.

## MMath project overall marks

The following paragraphs are a guide for MMath project markers regarding the quality of the written report and viva.

- mark  $< 40$ . **Fail.** Results/discussions/reviews that are very incomplete or demonstrate a serious misunderstanding of the project material and/or little attempt by the student to engage with the MMath project. The project would need significant rewriting and/or new analysis to pass.
- $40 < \text{mark} < 50$ . **Fail.** Not at pass standard because the project fails to satisfy one or more of the criteria described in the “Pass” paragraph below. The project will be suitable for a pass if appropriate revisions are made.
- $50 < \text{mark} < 60$ . **Pass.** The project objectives are satisfactory for M-level. Results/discussions/reviews are largely correct. Student may have required close guidance from the supervisor and shown little independence. Student demonstrated a reasonable understanding of core material, but may have struggled with more difficult concepts. The report is a coherent description of the project with some attempt to discuss the results in the context of published work.
- $60 < \text{mark} < 70$ . **Merit.** The project objectives are reasonably demanding for M-level, going beyond taught material in the subject area. Student demonstrated their own initiative in places. Results/discussions/reviews are correct overall with relatively few minor errors. The student demonstrated that they understood the aims and conclusions of the project; e. g. the student demonstrated independent research skills and required minor input from the supervisor (to a large extent, they were able to write own code, and able to derive the analytical results on their own). The student’s work is presented competently and makes adequate reference to published work.
- $70 < \text{mark} < 80$ . **Distinction.** The project objectives are impressive for M-level, requiring the mastery of unfamiliar concepts. The student demonstrated that they understood fully the aims and objectives of the project; e. g. with a comprehensive literature review that puts their results/conclusions into the context of published work. Results/discussions/reviews are clear and correct with only a few minor errors. The

student took own initiative in many places, demonstrating that they could do independent calculations/numerics.

- $80 < \text{mark}$ . **High Distinction.** The MMath is publishable or at least very close to being publishable in an academic journal, or could be published as a technical report: where the developed results could easily lead onto a PhD project, or be of use to a future employer. Results/discussions/reviews are presented lucidly and are correct in almost all details. The literature review and discussion puts the student's work into context comprehensively, taking a view of the subject and presenting avenues for future research. Student showed a high degree of independence, leading the project themselves.

## Marking process

Once submitted, the supervisor and a second marker separately mark the project report, using the assessment criteria given above. They mark the viva separately, and provide an overall mark. The two markers then need to agree on a final mark. In case of large difference between the two marks and/or no final agreement, an internal moderator (usually the module leader) looks at the project and helps reconciling marks. The moderator also goes over all the projects and the allocated marks to compare project quality across the subject areas and ensure consistency across the cohort. An external examiner (i. e. an academic outside of Exeter) will also see a sample of the projects to assure quality.

## Important for students

All written work, and research carried out must be your own (once taking into account assistance from the project supervisor). All literature and sources used must be cited appropriately, this includes any code developed, and significant calculations written in the project. For guidelines: see

<http://www.exeter.ac.uk/students/administration/rulesandregulations/ug-pgt/academicmisconduct/>

Discuss relevant aspects with your supervisor (e. g. how often and at what level of detail to cite particular papers and books). When submitting, you will be asked to sign a declaration that the work is your own. All project reports will be put through the plagiarism detection software *Turnitin*. The University takes plagiarism and other forms of academic misconduct very seriously and there can be very severe sanctions.