

Marking Conventions: Summary

M.Sc. in Mathematical Modelling and Scientific Computing 2011-12

The board of examiners will consist of 4 internal members (2 from the Numerical Analysis Group and 2 from OCIAM) and 1 external examiner. The examiners will appoint assessors to help with the assessment of the course.

All students should complete 13 units. Each unit will carry the same weight. Marks will be given in terms of USMs (University Standardised Marks) out of 100 with the usual conventions: 0-49 fail, 50-69 pass, 70-100 distinction.

All students should take and be assessed on 13 units:

- 4 written examinations on core courses (1 unit each);
- 2 special topics: one labelled [M] and one labelled [C] (1 unit each);
- 1 case study in mathematical modelling (1 unit);
- 1 case study in scientific computing (1 unit);
- 1 dissertation and viva (4 units);
- 1 further special topic or case study (1 unit).

1. **Core Courses** (1 unit each). The core courses will be taught in Michaelmas and Hilary Terms and will be assessed by four written examinations, two in Week 0 of Hilary Term and two in Week 0 of Trinity Term. Each paper will be two hours long and contain 6 questions. The best 4 answers, including an answer to at least one question in each section, will count and students will be given a USM for each paper, with a weighting of 1 unit.
2. **Special topics** (1 unit each). Each student must do at least one special topic in the area of Modelling [M] and one in the area of Computation [C]. For each special topic taken the student must submit a mini-project. Mini-projects will be marked by the appropriate lecturer. For each mini-project they will be given a USM (0-49 fail, 50-69 pass, 70-100 distinction), with a weighting of 1 unit.
3. **Case Studies in Mathematical Modelling and in Scientific Computing** (1 unit each). Each student must do at least one modelling case study and at least one scientific computing case study. Each scientific computing case study involves 4 weeks of group work, further personal study and a report. Each mathematical modelling case study involves 5 weeks of group work, an oral presentation and a report. In both cases reports are written individually and are marked by the appropriate lecturer. For the modelling case study 20% of the mark will be for the oral presentation. Each case study will be given a USM (0-49 fail, 50-69 pass, 70-100 distinction), with a weighting of 1 unit.
4. **Dissertation** (4 units). Dissertations will be read and marked by two examiners/assessors, neither of whom is the student's supervisor and at least one of whom will be an examiner. The main body of the dissertation should be up to 50 pages long (excluding figures and tables), and need not necessarily contain original research to pass. All students will also be examined viva voce. The dissertation and viva will be given a USM with a weighting of 4 units. The USM marks will include credit for originality and performance in the viva.

The USMs, weighted as above, are averaged to give an Average USM.

Students will only be considered for a Distinction if they fulfil all the following criteria:

- Average USM ≥ 70 ;
- All partial USM ≥ 50 ;
- Dissertation and Viva USM ≥ 70 .

Students will fail if the average USM < 50 . Candidates who fail 4 or more units of assessment may also fail even if their average USM ≥ 50 .

Otherwise, students will be awarded a Pass.

Qualitative class descriptors for these levels of performance are summarised below.

Distinction: High quality work throughout the course. The candidate shows excellent problem-solving skills and excellent knowledge of the material over a wide range of topics, and is able to use that knowledge innovatively and/or in unfamiliar contexts.

Pass: The pass covers a wide range of results from candidates who show basic problem solving skills and adequate knowledge of most of the material to candidates who show good or very good problem-solving skills, and good or very good knowledge of much of the material over a wide range of topics.

Fail: The candidate shows inadequate grasp of the basic material. Candidates may have shown some understanding but the majority of work is likely to show major misunderstanding and confusion, and/or inaccurate calculations.

Marking Conventions: Further Details

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Criteria for USMs

90-100: The candidate shows remarkable ability and true insights. Dissertations in this band will be worthy of publication.

80-89: The candidate shows outstanding problem-solving skills and outstanding knowledge of the material over a wide range of topics, and is able to use that knowledge innovatively and/or in unfamiliar contexts.

70-79: The candidate shows excellent problem-solving skills and excellent knowledge of the material over a wide range of topics, and is able to use that knowledge innovatively and/or in unfamiliar contexts.

60-69: The candidate shows good or very good problem-solving skills, and good or very good knowledge of much of the material over a wide range of topics.

50-59: The candidate shows basic problem solving skills and adequate knowledge of most of the material.

40-49: The candidate shows reasonable understanding of at least part of the basic material and some problem solving skills. Although there may be a few good answers, the majority of answers will contain errors in calculations and/or show incomplete understanding of the topics.

30-39: The candidate shows some limited grasp of basic material over a restricted range of topics, but with large gaps in understanding. There need not be any good quality answers, but there will be indications of some competence.

0-29: The candidate shows inadequate grasp of the basic material. The work is likely to show major misunderstanding and confusion, and/or inaccurate calculations; the answers to most of the questions attempted are likely to be fragmentary only.

Marking of Individual Units of Assessment

Once a piece of work has been submitted, it cannot be withdrawn. Students may not submit work for assessment for more than 13 units. All individual units of assessment will be marked as described below.

Core Courses: The core courses are assessed by written examinations. Each examination lasts for two hours and consists of six questions (four in one section and two in the other). Each question is marked out of 25 according to an approved marking scheme and these marks are independently checked to ensure that all parts have been marked and that the marks have been correctly totalled and recorded. A mark of zero will be recorded for any part or parts of questions that have not been answered but which should have been answered. Each student's raw mark consists of their best mark from each section and their two other best marks. The examiners recalibrate the raw marks to arrive at USMs.

Special Topics: Special topics are assessed by mini-projects which are marked by the course lecturer. The final USMs are then awarded by the examiners based on the recommendation of the course lecturers when all the special topics have been marked.

Case Studies: The Case Studies in Mathematical Modelling are assessed by a group presentation and a report. The presentations are given a mark out of 20 (agreed by two assessors) and the reports are marked out of 80 by the course lecturer. The Case Studies in Scientific Computing are assessed by a report marked by the lecturer. A mark out of 80 is awarded for the write up of the group work and a mark out of 20 is awarded for the write up of the student's individual extension. (If the student has not extended the project, they are given a mark of zero for this part of the project.) The final USMs are awarded by the examiners based on the recommended raw marks.

Dissertations: The dissertation is read and marked by two internal assessors/examiners, neither of whom is the student's supervisor and at least one of whom is an examiner. The dissertations of students at the pass/fail or pass/distinction borderlines are also read by the external examiner. The assessors for the viva voce examination will be the examiners who have read the dissertation. If the assessors are unable to agree a mark the decision will be referred to the other examiners.

Late Submission of Coursework

Late Submission of coursework (this includes case studies and special topics) is a serious matter and will usually result in academic penalties unless prior permission for late submission has been given by the Proctors. In the absence of such Proctorial permission, the penalty will be at least 5% reduction of the mark available for the late work and may be more, the exact penalty to be set by the Examiners with due consideration to relevant Proctors Notes for Guidance.

Where no work is submitted, the Proctors may decide not to permit the candidate to continue on the M.Sc. course. If the Proctors permit the candidate to continue on the M.Sc. course, a mark of zero will be awarded for that particular piece of work.

Candidates must attend all written examinations for the M.Sc. course unless permitted not to by the Proctors. Any case of non-attendance at an exam involving illness or other medical condition will require written medical evidence and will usually be referred to the Proctors.

Usage of Formative Feedback

The course lecturers who mark the case studies and special topics are encouraged to give comments providing constructive feedback on the projects they marked. This feedback is passed on to the students in the hope it will help them to improve future project work. In order to give further feedback to students, particularly after their first special topic, they will usually be given an indicative grade of A (very good), B (satisfactory), C (borderline) or D (poor) by the Chair of Examiners soon after the relevant special topic has been marked. The grades will be related to the marks as follows:

- A: 65-100
- B: 55-64
- C: 45-54
- D: 0-44.