Case Studies in Scientific Computing

M.Sc. in Mathematical Modelling and Scientific Computing

16th January 2023

The Case Studies in Scientific Computing make up one unit of the M.Sc. course. Every student should complete at least one of these. It is possible to do a second case study in place of a special topic if you wish.

In the initial lecture the projects will be briefly outlined. Following this everyone should email their top three choices of project to kathryn.gillow@maths.ox.ac.uk by 5pm on Thursday of week 1 at which point the groups will be allocated. After that the groups will meet with the lecturer for one hour per week for four weeks. In the first three weeks of each project tasks will be set to be completed by the following week. These will be solvable using Matlab and techniques learnt in the core courses with hints given in class. In the 2nd, 3rd and 4th weeks of the project we will also look at the solution to the previous week's tasks. In the final session ideas for extensions to the project will be discussed. Whilst the majority of the work will be undertaken in groups, it is expected the extension will be completed individually.

The assessment for the Case Studies in Scientific Computing is in the form of an individual report. The report should primarily consist of a write up of the tasks completed weekly along with text to introduce the problem and explain the mathematics used. The report should be about 15 pages up to a maximum of 20 pages without penalty. The page limits include appropriate figures and tables. It is not necessary to include your Matlab code. Guidelines for writing the case study report (font size, margins etc) are the same as for special topics.

The report will be given a mark out of 100. Of this, 25 marks will be for the presentation of the report (typography, graphics, prose style, clarity of mathematical expression, appropriate referencing), 25 marks will be for the individual extension and the remaining 50 marks will be for the main content of the report (is the maths right, do the numerics support the theory, can you explain unexpected results etc).

Your report should be submitted by 12noon on Monday of week 3 of Trinity Term via Inspera.