M. Sc. mini-projects

These should take about a week to complete. They should be on a subject of your choice, which has relevance to the course. For geoscience, you might choose some aspect of river flow or glaciers, for example; for biology you might choose respiratory physiology or glycolysis. But topics are not limited to parts of the course. For example, kidney function, oscillatory chemical reactions, volcanic eruptions, lake pollution, might all provide suitable subjects.

The material should be presented in LaTeX, should typically be 15 pages in length (but there is no limit), and should take the form of a scientific document, with title, author, section headings, and a reference list, typically having a dozen references, most of which should be scientific papers. Essentially the mini-project is a small scale version of the summer dissertation.

It does not need to be original, but equally should not be a regurgitation of lecture notes or sections of a book or papers. It needs to be your own review of a subject, at the end of which the reader should be informed of the status of a subject. Something like an article in New Scientist or Scientific American for example, there should be a story: you need to organise and synthesise the material that you read, and present it in a comprehensible manner. There should be a beginning, a middle and an end. You should have sections such as Introduction, Mathematical Models, Analytic Results, Numerical Computations, Conclusions (but perhaps less blandly titled).

A good project will show understanding of the material, be well written and presented (properly proof-read, grammatically correct and so on), and should show evidence of knowledge of a variety of aspects of the subject: the basic physics or biology, the mathematical models, numerical and experimental results. Just as in a paper, one does not need inordinate details of calculation, but rather some more sophisticated overview.

A sample mini-mini-project and its LaTeX source code is provided.

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