Mini-Projects Guidelines

General Guidance

Students should submit before the deadline to Teams and to aucs.annie@gmail.com via your email

The maximum length of the report is 4,000 words. This is understood to be the upper limit and essays that are shorter than this can still achieve maximum marks. The word count does not include figures, tables, displayed equations or references, nor supplementary material in appendices. Students are encouraged to ensure that the essay is clearly focused and that detailed material that would distract from this (e.g. technical mathematical derivations, computer program listings, DNA sequences etc) is placed in an appendix. However, additional material should be kept to a minimum, and its relevance to understanding key aspects of the report should be clearly explained. In particular, it is not normally necessary to include computer code, though an outline of computational procedures used can be valuable. Computer animations, or other types of media, can be included as part of the report, as long as satisfactory arrangements can be made for the board of examiners to view such material. In case of uncertainty, the advice of supervisors and/or course directors should be sought.

Finally, students should note that all essays will be subjected to plagiarism checks via Turnitin / Urkund. Plagiarism and all other forms of misconduct will not be tolerated in any form and all students must abide by the Ethics in Code of Practice.

Practical tips and style guidelines

Level and clarity

As a rule of thumb, you should write your report as if it were designed for a 'general audience' of non-experts, such as your fellow students. You should not make too many assumptions about what aspects of the modelling/physical sciences (or life sciences) can be taken for granted, i.e. you need to explain terms that others (not having researched the field) may not know the meaning of.

Clarity of expression is also very important. To help with this it is often a good idea to get a friend to read sections you are concerned about - they can soon tell you if it conveys the right message in a simple fashion.

Content

You need to provide a clear explanation of the biological problem that forms the main focus of the project. You also need to explain clearly how the mathematical/physical sciences can help to solve this biological problem. Remember that these are interdisciplinary projects, so the examiners will be looking for an integrated approach. A well-written, balanced review of the relevant literature (doing justice to both the biological and mathematical/physical aspects of the problem) will be the minimum requirement for

a pass and should be the first objective of your work, however, to achieve a higher mark you will need to provide some original research work of your own.

Original work

This is not as difficult to provide as it may seem. Original work can come in a number of forms. A careful and critical assessment of the literature can often throw up original points and ideas. When reading articles don't just accept what the authors say but see if you are really convinced. Also, remember that we are more interested in encouraging original ideas (e.g. perhaps the model would be applicable to another system, or could be improved/extended in some way) than we are in worrying about whether or not you can squeeze out enough time to debug a Mathematica model that implements this. Having said that, if you do have time to perform some modelling or analysis it will be very welcome. But do not spend too much time on this at the expense of other aspects of the project. Remember, you are marked on the final report, not on unproductive 'effort'. Finally, don't work in isolation - see your supervisors, and talk to other students. Supervisors should be able to help, often by providing the starting threads of an idea that you will be able to follow. It shouldn't necessarily be a worry if this idea doesn't work out. As long as you can explain why it seemed reasonable to pursue a particular idea, and why it has failed upon closer inspection, this can still be the basis of an excellent piece of work.

References

There are basically three uses for references. First, they can (and often should) be used to support a particular fact or argument, e.g. "single ion channel mechanisms can be understood in terms of stochastic processes (Colquhoun and Hawkes, 1981)". Second, they can be used to refer the interested reader to a source of more information on a particular topic, e.g. "For a more detailed discussion of single channel modelling see Colquhoun and Hawkes (1981)". Finally, they should be used whenever figures or text are taken from the literature, e.g., "Figure taken from Colquhoun and Hawkes (1981)". In all cases you need to incorporate the references into your text at the appropriate point and you then need to give a complete citation in the references section of your report. You can look at any scientific paper to see the style(s) used but the following example should give you the idea:

In the text: *"Some of the most important ideas in modern neuroscience stem from work on the neuromuscular junction carried out at UCL (e.g. Fatt and Katz, 1952)."*

Then in your references section:
Fatt, P. and Katz, B. (1952). Spontaneous subthreshold activity at motor nerve endings. J. Physiol., Vol., 117(1), 109-128.