READING ASSIGNMENT

Choose three related articles which involve modelling populations or diseases. At least one of these articles must have been published in 2007 or 2008. Read the articles you have chosen and prepare a twenty to twenty five minute talk to be presented to the class.

This is *not* a repeat of the essay. In-depth understanding of the guts of the mathematics and/or biology is not necessarily expected. You should, however, answer these sorts of questions in your synopsis:

What is the epidemiological/ecological application? Why is it important and/or interesting?

What mathematical modelling is done? How does the mathematics relate to the biological application? What type of mathematical approach is used (*e.g.* stochastic techniques, discrete mathematics, differential equations, solving equations numerically *etc.*)? Are any new mathematical results proved or new mathematical techniques developed?

How do the results obtained from the mathematical analysis compare with experiments or observations? What new insight does the modelling give into the biology? Are any new effects predicted? Any new experiments suggested?

What developments/changes do you see between the papers you have chosen? How are these articles related?

Obviously not all these questions will be relevant to any particular set of articles and there may be other issues or aspects that you will want to mention. The aim is to give a feel for what the topic is about.

Marks will be awarded for presentation style and content and also for adventurousness in choice of subject matter/articles. Marks will be deducted for going overtime so it is worth planning your talk carefully. A list of journals which publish mathematical biology research in population biology and epidemiology and which are held by Sydney University libraries is given below to help you get started.

You should prepare a sheet, to hand in when you give your talk, with the author(s), title, date journal, volume and page numbers for each of your three articles.

You may use data projection, overhead projectors or the blackboards if you wish.

List of Journals to get you started

Mathematical Biosciences
Journal of Mathematical Biology
Bulletin of Mathematical Biology
Proceedings of the Royal Society of London, Series B
Theoretical Population Biology
Journal of Theoretical Biology

All of these journals are available on the web from computers with a University of Sydney IP address. The best place to start is to look up them up is Fisher Library catalogue. The catalogue entry has a link to the journal's home page and perhaps to other providers of electronic content. Some providers may want you to pay for content but you should be able to find at least one that is free.

Marking criteria for Reading Assignment

Content 8 marks in total

2 marks Explanation of application including significance of the area of application

2 marks Description of mathematics and modelling

2 marks Explanation of how the mathematics is related to the biological application

2 marks Synthesis and comparison of papers

Presentation 7 marks in total

2 marks Flow of ideas—is the talk presented in a logical order; is the content of the talk synthesised into a coherent whole.

2 marks Verbal presentation—is the delivery clear, confident and aurally interesting.

3 marks Visual presentation—-are the slides clear, well-designed and confidently handled; do the slides enhance the content of the talk.

Choice of material 5 marks in total to be awarded on the following scale.

5 marks out of 5 Three very challenging and diverse papers were chosen containing material not yet covered by the course or student's essay.

3 marks out of 5 Three papers chosen that are moderately challenging or moderately diverse. These may touch on material in the course, but it is not their main focus.

1 mark out of 5 Three easy papers chosen that are comprised mainly of material already covered in the course.

Note: 4/5 and 2/5 will also be awarded for intermediate standard choices.