AMH5   **PDE Models in Mathematical Biology**   **2017**

Access Grid Room (Carslaw 829)   Tue, Thu 10-11am
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Course website:
http://www.maths.usyd.edu.au/u/pkim/CourseWebsites/2017sem1_MathBioHonours/2017-sem1-mathbiohonours.html

Alternatively, go to http://www.maths.usyd.edu.au/u/pkim/ and follow the Link under
"Teaching" to "PDE Models in Mathematical Biology (semester 1, 2017)".

Semester Schedule
This course will run for 2 hours per week for 12 weeks (weeks 1 to 12 of the semester). The date
of the final exam is to be decided based on the other honours courses. (Often it's on week 13.)

Objectives/outcomes:

Utilise PDE systems to model a range of biological systems. Develop techniques for analysing
PDE models. Understand and present models from current or recent research articles.
Understand links between discrete (and possibly probabilistic) agent-based models and
continuous PDE systems.

Course Content
We will cover the following topics:
- Age-structured models
- Diffusion
- Chemotaxis
- Fisher's equation
- Travelling waves/fronts
- Connecting PDEs to agent-based models

Course Assessment
- Participation is class discussion [10%]
- 2 Short assignments (will need MATLAB) [2 x 10%]
- Reading assignment [20%]
- Exam – Two-hour closed book exam [50%].

Useful Books

J.D. Murray, *Mathematical Biology*, any edition. (available for 2-hour loan at Fisher Library)
J.P. Keener, J. Sneyd, *Mathematical physiology*.