Case Studies in Mathematical Modelling (MMSC)

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Presentations about the Case Study problems

- Introduction to MMSC Case Study projects (Robin)

- Project 1. Modelling the dynamics of a jumping popper (Marc Sune)

- Project 2. Modelling infectious disease outbreaks (Fanny Bergstrom)

- Project 3. Non-equilibrium flow of water in unsaturated porous media (Graham Sander)

- Project 4. Modelling the dynamics of flapping flyers (Christiana Mavroyiakoumou)

- Project 5. Mathematical modelling of cranial neural crest cell migration (Sam Johnson)

- Project 6. Pattern Formation in Tissues: From Development to Pathology (Adrien Hallou)

- Project 7. Mathematical models of Alzheimer's disease treatments (Georgia Brennan)

- Project 8. Solitary waves in thin-film models for fluid convection (Dan Hill)

Group allocation

Please email an ordered list of **at least three** preferred problems to
robin.thompson@maths.ox.ac.uk

Deadline: 5pm on Thursday 22nd January

I will allocate students to groups, and email you to let you know your allocation

If you miss the deadline, I will assume that you are happy to be allocated to any of the problems

Group meetings

You will have weekly one-hour group meetings with the project supervisor in weeks 2-7

Your supervisor will provide the group with guidance as you devise and analyse mathematical models for the given problem

As a group, please liaise with your supervisor to find a mutually convenient time slot

Assessment

- Group presentations (20% of final mark)

- Individual project reports (80% of final mark)

Group presentations

Group presentations will be held from 2pm to 4pm on **Wednesday of week 8**

They will consist of 9-minute presentations, plus 3 minutes Q&A

Please can one person in each group email your slides (saved as PDF) to
robin.thompson@maths.ox.ac.uk by 9am on **Monday of week 8**

Individual project reports

Each student is required to write-up an individual project report, summarising:
- The problem studied (including necessary context)
- The modelling undertaken
- The results achieved
- Conclusions obtained

The deadline for submission is **12 noon on Tuesday of week 2 of Trinity term (5th May)**

Individual project reports

Each student is required to write-up an individual project report, summarising:
- - The problem studied (including necessary context)
- - The modelling undertaken
- - The results achieved
- - Conclusions obtained

The deadline for submission is **12 noon on Tuesday of week 2 of Trinity term (5th May)**

Approximate length: 12 pages
Absolute limit (before marks are deducted): 16 pages

[These page limits exclude references, title page, appendices; minimum 12-point font, one and a quarter line spacing; markers may not read appendices!]

Questions?

If you have any questions during the group projects, please ask your supervisor in the first instance.

If you then require additional clarification, please feel free to email me (robin.thompson@maths.ox.ac.uk) or Kathryn (kathryn.gillow@maths.ox.ac.uk)

Most importantly, please have fun undertaking your mathematical modelling Case Study project!