

Mathematical

Institute

Case Studies in Mathematical Modelling (MMSC)

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Presentations about the Case Study problems

4.05pm. Introduction to MMSC Case Study projects (Robin) 4.15pm. Project 1. Brownian microswimmers (Maria Bruna) 4.30pm. Project 2. Optimising strategies for long-distance cycle races (Matthew Shirley) 4.45pm. Project 3. The dynamics of jumping poppers (Marc Sune Simon) 5pm. Project 4. Models of protein aggregation in the brain (Georgia Brennan) 5.15pm. Project 5. Novelty search in infinite dimensional spaces (Peter Grindrod) 5.30pm. Project 6. Topics in computational biology (Jotun Hein)

Group allocation

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

Deadline: 5pm on Tuesday 21st 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 4pm to 6pm on Monday of week 8

They will consist of 12-minute presentations, plus 5 minutes Q&A

Please can one person in each group email your slides (saved as PDF) to <u>robin.thompson@maths.ox.ac.uk</u> 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 6th May (week 2 of TT)

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 6th May (week 2 of TT)**

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 (<u>robin.thompson@maths.ox.ac.uk</u>) or Kathryn (<u>kathryn.gillow@maths.ox.ac.uk</u>)

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