BSP: Structured projects in mathematical modelling and numerical computation

This double credit option is designed to help you understand applications of mathematics to current research problems, and to learn some of the necessary techniques. We hope that it will help you to develop skills that will be useful to any future career: understanding new problems; working with new people; carrying out numerical computations; making oral presentations; independent study and time management.

You will be expected to:
(a) Learn about a current research problem from relevant research papers.
(b) Carry out the required calculations using MATLAB.
(c) Write up the problem and your findings.
(d) Give an oral presentation to a non-specialist audience.
(e) Undertake peer review.

In 2020–2021 there will be a choice from at least four projects including:
Diffusion Limited Aggregation,
Mathematical Biology,
Random Plane Waves,
Thermohaline Circulation.

Synopses for last year's projects can be found on the BSP website as a guide to what to expect for this year.

Michaelmas Term
There will be a group meeting with the course organizer, Cath Wilkins, at the beginning of MT and individual meetings with her at the end of MT. Between those times you will be expected to read around your chosen topic, learn LaTeX and MATLAB, complete a practice peer review, and make a start on your project. Regular individual contact with the organizer by email, or if necessary in person, will be encouraged. You will also meet once with your specialist supervisor towards the end of term.

Hilary Term

Week 1:	Lecture on key skills, dissertation writing and the structure of the term.
Weeks 1, 3, 5, 7:	Each student to meet with specialist supervisor.
Weeks 7-8:	Help with presentations, including a mock presentation.
Monday Week 10:	Submission of written report.
Easter vacation:	Peer review.

Trinity Term

Week 1:	Oral presentations.

Students have sometimes expressed doubts about the predictability or reliability of project assessment. We are therefore concerned (i) to make the assessment scheme as transparent as possible and (ii) that students who produce good project work should be able to achieve equivalent grades to students who write good exam papers.

The mark breakdown will be as follows:
Written work 75%,
Oral presentation 15%,
Peer review 10% (these marks go to the reviewer for their assessment; they will NOT affect the mark of the reviewee, whose work will already have been graded by the examiners in the usual way).

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