

BSP: Structured Projects in Mathematics

Note that this course is a merged version of the previous (pre-2024) BEE and BSP options

This double credit option is designed to help you understand mathematical research problems, and to learn some of the necessary techniques involved. 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 where appropriate; making oral presentations; independent study and time management.

There are two strands to BSP and you take either Strand A or Strand B.

Strand A is where you select a pre-prepared, pre-approved project from our list of projects; places on these projects will be strictly limited due to supervisor availability.

Strand B is where you find your own project and supervisor, and submit a proposal for approval.

Due to limited places on Strand A, if you want to be considered for this option then you are advised to apply for BSP on time, and not to assume that you have a place until it has been confirmed.

Both strands are treated identically once the course starts. You will be expected to:

- (a) Learn about a current research problem from relevant research papers.
- (b) Write up the problem and your findings, including any computational work if applicable.
- (c) Undertake a peer review.
- (d) Give an oral presentation to a non-specialist audience.

We are still finalizing our Strand A projects for 2026-2027 but hope to offer projects on topics such as:

Diffusion Limited Aggregation

Fractal Sets and Measures

Gaussian Fields

Modelling HPV

Numerical Linear Algebra

Thermohaline Circulation

Previous BEE topics (which would now come under Strand B of BSP) are very diverse and have included:

Application of Diffusion Models in Bioinformatics

Equi-distribution Estimates and Fractional Parts of Polynomials

Proof Theory and Diagrammatic Reasoning

The Isoperimetric Inequality

Michaelmas Term

There will be a lecture outlining the course at the beginning of MT, and a class at the end of term to go over a practice peer review. Between those times you will be expected to read around your chosen topic, learn LaTeX, complete the practice peer review and make a start on your project. You will also meet with your specialist supervisor at the start and end of term.

Hilary Term

Week 1: Lecture on key skills, dissertation writing and the structure of the term.

Weeks 1-8: You will meet regularly with your 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 presentation.

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).