1 BSP Structured Projects

1.1 Overview

Quota Students will be able to choose a project from a menu of six to eight possibilities (Strand A), or suggest a project of their own (Strand B). Each project has a quota of two to three students. This project may be offered for examination at Part B as a double unit. It is equivalent to a 32-hour lecture course. Generally, students will have 6 hours of supervision distributed over Michaelmas and Hilary terms.

Students considering offering a project should read the *Part B Projects Guidance* available at:

`https://www.maths.ox.ac.uk/members/students/undergraduate-courses/teaching-and-learning/part-b-students/projects/part-b-projects`

Students who wish to take Strand A BSP **must** register their interest in BSP in the July course registration. After the course registration form has closed, students will be contacted with further details of the Strand A projects available for next year. Students will then be informed at a later date whether they have been allocated a place on a Strand A BSP project. Students wanting to offer a Strand B project need to submit the BSP Project application form available via:

`https://www.maths.ox.ac.uk/members/students/undergraduate-courses/teaching-and-learning/part-b-students/projects/part-b-projects`

1.2 Learning Outcomes

This option is designed to help students understand applications of mathematics to live research problems and to learn some of the necessary techniques. For those who plan to stay on for the MMath or beyond, the course will provide invaluable preliminary training. For those who plan to leave after the BA, it will offer insights into what mathematical research can involve, and training in key skills that will be of long term benefit in any career.

Students will gain experience of:

1. Reading and understanding research papers.
2. Working with new people in new environments.
3. Meeting the expectations of different disciplines.
4. Presenting a well structured written report, using LaTeX.
5. Making an oral presentation to a non-specialist audience.
6. Reading and assessing the work of other students.
7. Independent study and time management.
8. Applications of numerical computation to current research problems, if relevant.

Students will be expected to:

1. Learn about a current research problem by reading one or more relevant research papers together with appropriate material from textbooks.
2. Carry out the required calculations (if relevant) using Maple, MuPAD, Python, or MATLAB. Students are not expected to engage in original research but there will be scope for able students to envisage new directions.
3. Write up the problem and their findings in a report that is properly supported with detail, discussion, and good referencing.
4. Undertake a peer review.
5. Give an oral presentation to a non-specialist audience.

1.3 Synopsis

In past years Strand A projects have included applications to biology, finance, fractals and earth sciences. It is expected that a similar menu of topics will be available for 2026-2027.

Teaching

Michaelmas Term

There will be a group meeting with the organiser (Cath Wilkins) at the beginning of MT to set out expectations and deal with queries. The organiser will meet again with students at the end of MT, to go over a practice peer review. Students will also meet with their project supervisor at the start and end of term Individual contact with the organiser by email, or if necessary in person, will be encouraged.

Hilary Term

Week 1 Lecture on expectations for the term, and advice on writing up.

Weeks 1 to 8 Students will meet regularly with their specialist supervisor. In addition, each student will meet with the organiser for a practice presentation.

Week 10 Submission of written paper.

Easter vacation

Peer review

Trinity Term

Week 1 Oral presentation

Assessment

Students (and tutors) 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 both to students and to assessors;

[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:

[a.] Written work 75%, of which:

50% of available marks will be for general explanation and discussion of the problem;

50% of available marks will be for mathematical calculations and commentary

[b.] Oral presentation 15%

[c.] Peer review 10%

Note on (c): This may be a new kind of assessment for you. As with journal peer review, the anonymity of both writer and reviewer will be strictly maintained. Each student will be expected to read one other project write-up (from this or previous years) and to make a careful and well explained judgement on it. Credit for this will go to the reviewer, not to the writer, whose work will already have been assessed by examiners in the usual way.