



PARTNERS ACADEMIC SUMMER SCHOOL 2025

Syllabus for Maths, Stats & Physics

Subject Area

This syllabus is for PARTNERS applicants seeking to progress to the degrees of:

- F300 BSc Hons Physics
- F303 MPhys Hons Physics
- F304 BSc Hons Physics with Foundation Year
- F344 MPhys Hons Theoretical Physics
- F345 BSc Hons Theoretical Physics
- F3F5 BSc Hons Physics with Astrophysics
- F3FM MPhys Hons Physics with Astrophysics
- G100 BSc Hons Mathematics
- G101 BSc Hons Mathematics and Statistics with Foundation Year
- G103 MMath Hons Mathematics
- G1N3 BSc Hons Mathematics with Finance
- G1N4 BSc Hons Mathematics with Business
- G200 BSc Hons Data Science
- GG13 BSc Hons Mathematics and Statistics
- GL11 BSc Hons Mathematics and Economics
- NG41 BSc Hons Mathematics and Accounting

Aims

To allow students to demonstrate their potential to succeed in specified degree programmes by showing a grasp of entry-level subject-specific knowledge, understanding, cognitive and subject-specific skills.

Learning Outcomes

A good knowledge and understanding of ...

- Mathematics: Algebra, differential calculus, complex numbers, vectors, confidence intervals, problem solving and computational numerical methods.
- Physics: Algebra, differential calculus, complex numbers, astrophysics, computational numerical methods, good experimental practice and laboratory skills.

The ability to apply this knowledge and critical understanding to...

- Assessment completed through Numbas.
- Practice problems to accompany each lecture.
- Completion of worksheets from the computer sessions (maths and physics), laboratory (physics) and problem solving (maths) sessions.

Competence in...

- Mathematics: Mathematics, its language, arguments and implementation. Basic programming, critical analysis and problem solving.
 - Physics: Physics concepts, mathematical concepts underpinning physics, good experimental practice and basic programming.
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Summer School Syllabus

Monday 30th June and Tuesday 1st July

Online sessions over Zoom, with delivery of material and example problem(s). Physics and Mathematics strands will take part in the same sessions, joint with Engineering students.

Wednesday 2nd July

Asynchronous assessment activity and travel, no scheduled academic sessions.

Thursday 3rd and Friday 4th July

Sessions are on-campus with a mix of lectures and practical sessions including computer sessions, experimental labs in the Physics strand and problem solving for the Mathematics strand.

Additionally, there will be some enrichment sessions, including a tour, a Q & A with student ambassadors about studying Maths/Physics at Newcastle and a research seminar.

Please see timetable for more details.

Activities for Personal Study

All material will be provided within the course, there is no reading required before attending either the Maths or Physics strands.

On-Campus Teaching:

Wednesday 2nd (PM) July, Thursday 3rd July, Friday 4th July

Online Teaching:

Monday 30th June, Tuesday 1st July

Formative Assessment Details

Two parts:

- (A) Assessment completed through Numbas (both strands)
- (B) Completion of worksheets from the computer sessions (maths and physics), laboratory (physics) and problem solving (maths) sessions.

Hand-in Method

Digital and physical

Assessment deadline

Part A) 12pm Friday 11th July

Part B) Completed and collected during sessions