



## **PARTNERS ACADEMIC SUMMER SCHOOL 2024**

### **Syllabus for – Maths, Stats & Physics**

#### **Subject Area**

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

- G100 Mathematics BSc
- G103 Mathematics MMath
- GG13 Mathematics and Statistics BSc
- GGC3 Mathematics and Statistics MMath
- G300 Statistics BSc
- G1N3 Mathematics with Finance BSc
- G1N2 Mathematics with Management BSc
- GL11 Mathematics and Economics BSc
- NG41 Mathematics and Accounting BSc
- CG81 Psychology and Mathematics BSc
- F300 Physics BSc
- F303 Physics MPhys
- F345 Theoretical Physics BSc
- F344 Theoretical Physics MPhys
- F3F5 Physics with Astrophysics BSc Honours
- F3FM Physics with Astrophysics MPhys Honours

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#### **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.

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#### **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 practicals

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

- Mathematics: Solving unseen problem sets and participating in problem-solving sessions.
- Physics: Solving unseen problem sets, participating in problem-solving sessions, completing experiments, analysing the data and discussing the results

Competence in...

- Mathematics: Mathematics, its language, arguments and implementation.
- Physics: Physics concepts, mathematical concepts underpinning physics, and good experimental practice.

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## Summer School Syllabus

Monday 1st and Tuesday 2nd July, online sessions over Zoom, with delivery of material and example problem(s). Physics and Mathematics strands will take part in the same sessions.

Wednesday 3rd July, asynchronous assessment activity

Thursday 4th and Friday 5th July, sessions are on-campus with a mix of lectures and practical sessions including computer sessions, experimental labs in the Physics strand, 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 attached 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.

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### Online Teaching:

Monday 1st , Tuesday 2nd July

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### On-Campus Teaching:

Wednesday 3rd (PM), Thursday 4th & Friday 5th July

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## **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.

More details will be provided by the Academic lead during the event.

## **Hand-in Method**

Digital

## **Assessment deadline**

Part a) 12pm Friday 12th July

Part b) Completed and collected during sessions