

A-level Physics

A-level Physics factsheet

Overview

Physicists look for the hidden laws as to why all matter and energy exists, where it comes from and its behaviour. These laws can then be used to develop new materials and technologies to improve our lives and explore further into everything from the tiniest particles to stars and the universe.

Key Facts

Start Dates:

- 5 April 2021 (in Brighton only)
- 6 September 2021
- 3 January 2022

Colleges:

- Bournemouth
- Brighton
- London
- Oxford

Entry level:

- Academic: Completed 10 years of schooling (GCSE or equivalent)
- English: IELTS 5.5 or equivalent

Minimum age:

- 16

Length:

- 2 Academic Years (3 terms)
- We also offer a One-Year A-level in Physics and an entry from Year 12.

Lessons:

- Average 21 hours per week (plus homework and private study)

Class size:

- 4-10

Learning outcomes

- Gain UK national university entrance qualification
- Raise English to university level
- Develop study skills required at degree level
- Develop specialist subject expertise

Course content and structure

The following syllabus outline is based on AQA exam board content. Please note that exam boards may vary from college to college.

Year 1

Measurements and their errors

- Use of SI units and their prefixes
- Limitation of physical measurements
- Estimation of Physical Quantities

Particles and radiation

- Particles
- Electromagnetic radiation and quantum phenomena

Waves

- Progressive and stationary waves
- Refraction, diffraction and interference

Mechanics and materials

- Forces, energy and momentum
- Materials

Electricity

- Current electricity

Year 2

Further mechanics and thermal physics

- Periodic motion

- Thermal physics

Fields and their consequences

- Fields
- Gravitational fields
- Electric fields
- Capacitance
- Magnetic fields

Nuclear physics

- Radioactivity

Astrophysics

- Telescopes
- Classification of Stars
- Cosmology

Medical physics

- Physics of the eye
- Physics of the ear
- Biological measurement
- Non-ionising imaging
- X-ray imaging
- Radionuclide imaging and therapy

Engineering physics

- Rotational dynamics
- Thermodynamics and engines

Turning points in physics

- The discovery of the electron
- Wave-particle duality

Electronics

- Discrete semiconductor devices
- Analogue and digital signals
- Analogue signal processing
- Digital signal processing
- Data communication systems

Typical A-level subject combinations with Physics

- Physics, Chemistry and Maths
- Physics, Economics and Maths
- Physics, Biology and Maths
- Physics, Art and Maths

Sample enrichment activities

- The Big Bang fair, NEC Birmingham
- Natural History Museum visit
- Oxford University Science laboratory visit
- Oxford University School of Medicine visit
- The Royal Society, London

- Science Club
- Science in the News Club
- Google Science Fair
- Hintze Lecture in Physics at Oxford University

Sample academic calendar (2021-2022)

Year 1

September

- 6th: term starts
- Student induction

October

- 18th - 22nd: half term
- Progress tests

November

- University fairs and talks

December

- 10th: term ends
- End of term exams

January

- 3rd: term starts

February

- 10th – 11th: half term
- Progress tests
- University fairs

March

- End of term exams
- 18th: term ends

April

- 4th: term starts

May

- Progress tests

June

- Exams
- 10th: term ends

Year 2

September

- 5th Sept: term starts

October

- 17th – 21st: half term
- 15th October: UCAS deadline (Medicine)
- Progress tests

November

- University fairs and talks

December

- 9th: term ends
- End of term exams

January

- 2nd: term starts

- 15th January: UCAS deadline (other subjects)

February

- 9th – 10th: half term
- Progress tests

March

- 17th: term ends
- Mock exams

April

- 3rd: term starts
- Progress tests

May

- Final exams

June

- 9th June: term ends

Recommended reading

Below is a list of books which may help you prepare for your studies prior to arrival. Please note that additional books, and online resources such as websites and journals will be shared once you begin your course.

- AQA Physics A Level Student Book, Jim Breithaupt
- A short History of Nearly Everything, Bill Bryson
- The Grand Design, Stephen Hawkin and Leonard Mlodinow Newton, Peter Ackroyd
- The Quantum Universe: Everything that can happen does happen, Brian Coxm and Jeff Forshaw

Degree progression

Physics is a challenging and interesting subject which will helps students who take the subject at A-level to understand the world and universe around them. Some students go on to study Physics at university, and others who study A-level Physics apply their knowledge in another subject area at university. Examples of this are the many branches of engineering, electronics and meteorology. For these careers, A-level Physics is essential.

Other students choose to study Physics because they feel that it will be useful even if not essential for their career. Those intending to follow a career in medicine or biochemistry often fall into this category.

Example degree courses which generally require Physics A-level include:

- Biomedical Sciences

- Biochemistry
- Computing
- Electronics
- Economics
- Engineering
- Environmental science
- Forensic Science

- Geology
- Medicine
- Medical Science
- Meteorology
- Optometry
- Pharmacy
- Physiotherapy
- Sports Science

Sample alumni progression

Liufeng Chen

- Physics/Economics/Maths
- University of Warwick (Engineering Management)

Ee Loon Sean Oon

- Physics/Economics/Maths/Further Maths
- UCL (Physics)

Yeqian Gao

- Physics/Art/Maths
- Newcastle University (Architecture)

Junhui Li

- Physics/Maths/Further Maths
- Aston University (Computer Science)

Pengguang Lu

- Physics/Economics/Maths
- University of Surrey (Economics and Finance)

Pantea Hassannia

- Physics/Biology/Chemistry/Maths
- University of Surrey (Medical Engineering)

Zeyu Song

- Physics/Chemistry/Maths
- UCL (Civil Engineering)

Timofei Fedotov

- Biology/Maths/Further Maths/Physics
- University of Oxford (Engineering)

Chuhan Zhang

- Physics/Economics/Maths
- University of Oxford (Engineering)