Physics A Level

Board: OCR, Specification Physics B - Advancing Physics

Contact Mr M Cripwell mcripwell@robertsmyth.tgacademy.org.uk

The course

Physics is the most fundamental of all sciences. It is an ideal option for those who are curious about the Universe and how it works. Physics is central to the current technological revolution, repeatedly making the seemingly impossible possible. You will experience a mixture of theoretical and practical physics, with an emphasis on how ideas can be applied creatively and used to explain real life situations. It provides you with a grounding in classical physics as well as an introduction to the newer, more-radical theories of recent times.

The advancing physics course provides a distinctive structure within which you learn both about fundamental physical concepts and about physics in everyday and technological settings. A primary aim of the course is to show how physics is practised and used today. Equally important, however, is to show the usefulness of the subject, and to illustrate the kind of impact that discoveries in physics have had on the way people live.

Course content and assessment

1. Development of practical skills
2. Fundamental data analysis
3. Physics in Action
   - Imaging and signalling
   - Sensing
   - Mechanical properties of materials
4. Understanding Processes
   - Waves and quantum behaviour
   - Space, time and motion
5. Rise and Fall of the Clockwork Universe
   - Creating models
   - Out into space
   - Our place in the universe
   - Matter in extremes
6. Field and Particle Pictures
   - Electromagnetism
   - Charge and fields
   - Probing deep into matter
   - Ionising radiation and risk

Design Technology: Product Design A Level

Board: Eduqas

Contact Mr N Crook ncrook@robertsmyth.tgacademy.org.uk

The course

A Level in Design and Technology aims to encourage students to be open to taking design risks, showing innovation and enterprise whilst considering their role as responsible designers and citizens. We want them to develop intellectual curiosity about the design and manufacture of products and their impact on daily life and the wider world. Through studying this course it is our desire that they gain an insight into the creative, engineering and manufacturing industries and develop the capacity to think innovatively to meet the needs, wants and values of users and clients. Further to this they will need to develop knowledge and experience of real world contexts for design and technological activity as they pursue their own personal design briefs. This will include having an in-depth knowledge and understanding of materials, components and processes associated with the creation of products that can be tested and evaluated in use and aim to have a positive environmental impact.

There is an increasing need to apply mathematics and scientific principles to the coursework and in preparation for exam questions so a good pass in these subjects at GCSE would be an advantage to students.

Course content and assessment

Component 1: Design and Technology in the 21st Century

Written examination: 3 hours, 50% of qualification

This written exam will be the culmination of 2 years study looking at topics such as designing and innovation, materials and components, industrial and commercial practice and human responsibility when designing. The subjects are aimed at preparing the students to be assertive contributors to a world that needs products that are designed with future generations in mind.

Component 2: Design and make project

Non-exam assessment: approximately 80 hours, 50% of qualification

This is a project of the students own choice that will be investigated, designed, developed, manufactured and rigorously tested. A formal portfolio will be presented to an external examiner during the spring term in their final year.