

Cambridge International AS & A Level

Physics 9702

Use physics to predict, test and improve the things around you.

Understanding the subject

Use physics to predict, test and improve the things around you. This introduction connects the subject with everyday questions, practical learning and possible future directions. It gives you a starting point before you explore the complete syllabus.

How much force stops a moving vehicle? How does a sensor turn a change into a signal? Why do some materials stretch more than others? These questions invite you to connect ideas with a real situation. Choose a model: a simpler picture of reality. Use it to predict what should happen. Compare that prediction with measurements. As you study, you will learn to explain your choices and check how well your ideas fit the situation.

What your learning will look like

Learning focus	What you will explore
Movement and energy	Use equations to predict motion. Explain how energy changes in systems. Connect simple models to real objects.
Light, sound and electricity	Explore patterns made by waves. Predict how a circuit will behave. At A Level, explore atoms and fields.

These examples introduce the subject. Open Syllabus Overview for the complete topic map and any qualification options.

Skills you will develop

Choose an equation for a real problem. Use a graph to test a relationship. Explain what your answer means. Plan and carry out a fair test. Estimate how precise measurements are. Explain how a method could improve. Practise these skills together: a clear answer should show how you reached it, not simply state a result. Use feedback to notice what you can already do and what needs more practice.

A useful habit

Ask: What is the evidence, and how does it support my explanation? Clear reasoning matters more than guessing an answer.

Putting ideas into practice

Imagine a light that turns on as it gets dark. Explore how a light sensor changes resistance. Use a low-voltage circuit to test the idea. This sets the context for applying what you have learned. Predict how the circuit voltage changes. Compare predictions with measurements. Explain errors and suggest improvements.

Connect the starting information to your explanation or decision. The diagram summarises this process; it is not an extra assignment. Practical work requires suitable equipment, supervision and safety guidance.

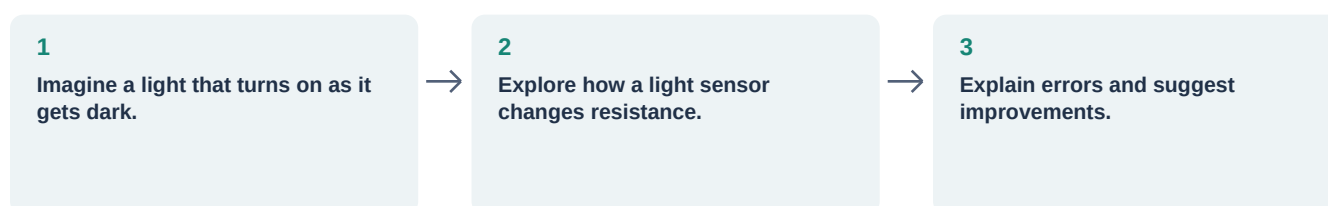


Figure 1. A simple sequence for turning a question into a reasoned explanation.

Future study and career connections

Circuit analysis supports electronics design. Force models help engineers test structures. Energy calculations help compare designs. Medical physicists use radiation and imaging. Researchers test models against evidence. Data analysis helps teams make decisions.

These connections show where the skills can be useful; the qualification does not award a particular job. Specialist roles usually require further study or training. You can explore these possibilities without deciding on a career now.

Your next step

AS develops your physics foundations. Full A Level takes your learning further. Explore degrees and technical routes. Notice which problems interest you. Explore the subjects your next course needs. Open Syllabus Overview to see what is ahead.

Use the subject map to see the learning ahead. For future study, check entry requirements with the institution; these can differ.

Keep the purpose in mind

This introduction helps you see why the subject matters and how you will learn. It is not the full syllabus or an assessment guide. Continue to Syllabus Overview, then Assessment Overview, for those details.

Reference

Based on the seven-slide course introduction and the Cambridge syllabus for 2025–2027. [Read the official Cambridge syllabus](#). Practical examples and career connections are illustrative.