

# Physics A level Transition pack

# WELCOME ...

... to the science that seeks to answer the question "Why?" - to describe all the things we see, as well as their motion, behaviour and interactions. Physics covers the entire history and future of the universe, and all objects from the fundamental matter we're made from to the structure of galaxies. Physicists look for patterns by making observations of the natural world, and models are developed to describe and predict them. Instruments, observations and experiments are then used to test and refine these models.

*(This booklet is available here <https://tinyurl.com/3j53ffuy> if you would like access to live links.)*



## The Course

At Chesterton Sixth Form you will be studying for the OCR Physics A qualification. As you progress through the course you will build on your knowledge of the laws of Physics, applying your understanding to solve problems on topics ranging from sub-atomic particles to the entire universe.

The content is divided into six modules:

Module 1: Development of practical skills

Module 2: Foundations of physics

Module 3: Forces and motion

Module 4: Electrons, waves, and photons

Module 5: Newtonian world and astrophysics

Module 6: Particles and medical physics

You will study modules 2,3, and 4 in year 12, and modules 5 and 6 in year 13. You will develop your practical skills (module 1) continuously throughout the course.

At the end of year 13 you will take 3 exams:

Paper 1: Modelling Physics (2hrs 15 min) Assesses modules 1, 2, 3 and 5 (weighting 37%)

Paper 2: Exploring Physics (2hrs 15 min) Assesses modules 1, 2, 4 and 6 (weighting 37%)

Paper 3: Unified Physics (1hr 30 min) Assesses content from modules 1-6 (weighting 26%)

You also have to demonstrate your practical skills and pass the Practical Endorsement which is continuously assessed, but this does not affect your grade.

The full specification can be found here:

<https://www.ocr.org.uk/Images/171726-specification-accredited-a-level-gce-physics-a-h556.pdf>



### Requirements for succeeding at A Level Physics

This isn't the grades you achieved at GCSE! Instead it is skills such as these (in no particular order):

- **Curiosity** Don't lose your love for science as the work gets harder - there are plenty of 'Wow, that's cool!' moments to come if you look out for them. And you should be looking out for science in the news, as well as exploring your own favourite area of Physics.
- **Organisation: equipment** Every lesson you should bring basic equipment including pen, pencil, ruler, scientific calculator and data book (once you have been given it). But you don't need a phone. Really, you don't!
- **Organisation: paper** You will often be given sheets for homework questions and preparation and feedback tasks, and you will make your own notes. Think about how you will organise all these so you don't lose them and can remember to bring things to the relevant lessons.
- **Self reliance** If you don't know how to do a question it isn't acceptable to just say 'I can't do it'. You need to develop independent research skills to help you tackle questions. This could include reading a textbook, searching online, discussing with other students, or even asking a teacher for a hint to get you started.
- **Time management** You will be given assigned work in fairly big chunks by two teachers. If you leave it all until the night before the deadline it won't be completed adequately – so think about how you will spread out and manage your workload.
- **Not fearing failure** OK, some people find this harder than others. But it is really important that you are prepared to have a go, that you are ready to put forward your ideas even if you are not sure, and in practical work that you write results down as you obtain them and don't wait to write them up 'perfectly' later.
- **Collaboration** Scientists work in teams! Your fellow physics students may (or may not) be your best friends, but you have to work together efficiently as colleagues. This is always the case in practicals, but is helpful in all aspects of the course.

## Preparing for A Level Physics

The essential preparation is to start the summer with a good rest, then keep your 'physics and maths' brain active as the new term approaches in September.

1. A Level Physics relies on GCSE Maths skills. Use maths revision resources to maintain and improve skills such as unit conversion, equation manipulation, trigonometry, percentages and using graphs.

As part of your maths preparation work complete the three assignments set on the 'Isaac Physics' online platform to practise some essential maths skills. *See below for more information on Isaac Physics.*

2. Maintain your interest in the world around you, especially the areas of Physics you find particularly interesting (Space? Sub-atomic particles? Engineering applications? etc.) There are many general interest books you could read (try a library?), as well as a lot of information and videos on the internet.
3. Do some Physics. Complete the 'Year 12 transition work: Physics Practice Booklet' and linked 'Y12 Transition Work: Exam Practice' available at the links below. These are based on the content that is in the Physics GCSE but not the Combined Science course. Doing this work will help anyone who has studied Combined Science to 'get up to speed' on these topics, and will help everyone else to revise the content and be ready to move forward into the year 12 course.

<https://tinyurl.com/yckhe6w4>



<https://tinyurl.com/v3u7sbu3>



## Introducing Isaac Physics

Physics insight and understanding comes through doing physics, in particular solving problems. Isaac Physics (IP) is a website designed to offer support and activities in physics problem solving to students (and their teachers) from GCSE through to Sixth Form (Y12 & 13) and beyond. It is funded by the Department for Education and based at the University of Cambridge.

You will need to register with IP to complete the assignments for Transition Task 1. If you have used IP before you can continue with your existing login until you have a Chesterton email to set up a fresh account, but you will still need to 'connect' to the 'Transition' class. If you do not already have an account you can register with any email address, but you will also need to set up a fresh account in September.

## Registering – Route A

Follow this link which will take you to the IP website and ask you to register.

<https://isaacphysics.org/account?authToken=PHY3V8>



You need to:

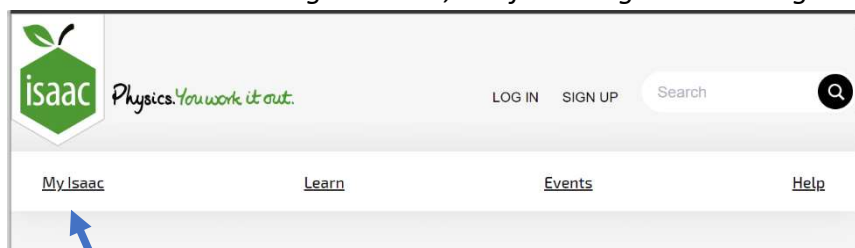
- Use a recognisable form of your name
- Use an email address and a password that you will **remember** (not much harm in writing this down).
- Give your date of birth (they need to know you are over 13)
- 'Confirm' that it is ok for your teacher (me) to have access to your data (and note that I only get to see data about which questions that you have been set you have actually done.)

## Registering - Route B

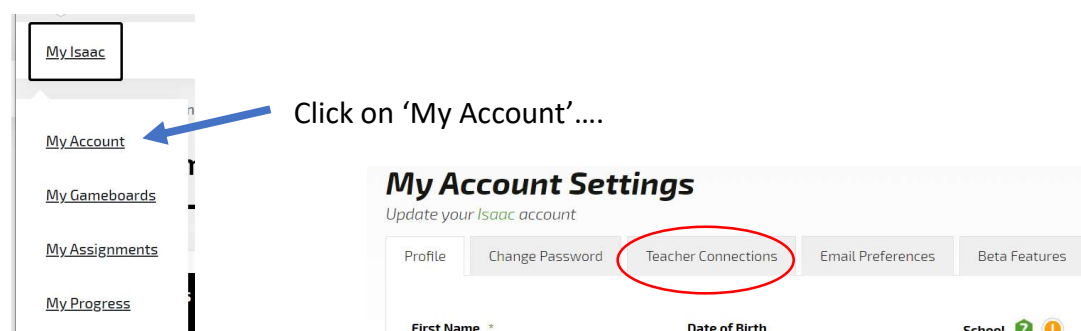
Go directly to IP ( <https://isaacphysics.org/> ) . Clicking the 'Sign Up' tab at the top will give you the opportunity to sign up (see a – c above).

## Connecting to the class

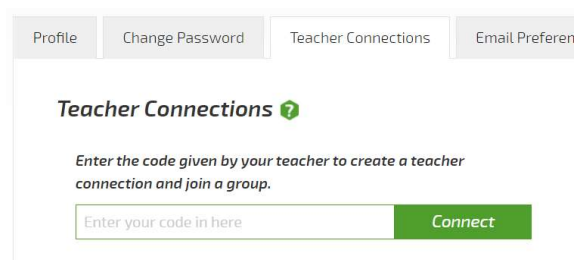
*For those with existing accounts, or after using 'Route B' registration.*



Click on 'My Isaac' and you will see something like....



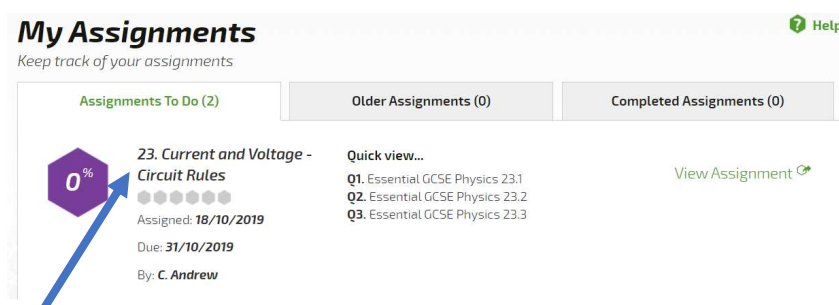
Click on 'Teacher connections' to see:



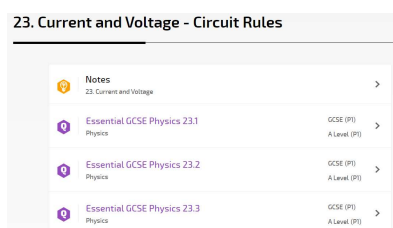
Enter the teacher connection code **PHY3V8** and click 'Connect'. Then 'Confirm' your teacher can see your data (and note that I only get to see data about which questions that you have been set you have actually done, nothing personal!).

## Finding assignments

Once you are registered and 'connected' to the teacher, clicking on 'My assignments' in the 'My Isaac' menu will take you to the class assignments. (If there is nothing there, try refreshing the web page. If there is still nothing, try the 'teacher connections' process again.)



Click on an assignment



Clicking on a purple 'Q' item will open up a question to do, the orange 'Notes' (if any) will contain potentially useful help and information. Your 'assignment' is to complete all the questions on the 'board'. If you get stuck note that each question has one or more 'hint' tabs you can look at.

Some Qs reveal only one question to do but others contain a set – but the total number of Qs on each assignment 'board' is similar so don't panic if it looks a lot.

Isaac Physics is a bit fussy about significant figures, so think about that if you can't see why your answer is wrong. It might be a good idea to do the significant figures assignment first! Also check if you need to convert units.

## Finding Help with Isaac Physics

PLEASE CHECK YOUR EMAILS FOR A WELCOME EMAIL FROM ISAAC PHYSICS (*check your junk folder*). If you respond to this it will confirm your email address, which can then be used if you need to reset your password at any point.

The site has lots of help available if you are connected successfully but struggling with how to actually answer the questions – just explore the various tabs and menus.

You can also contact the site administrators via the website. They are very good at responding to requests for help, both about how to use the site and how to do questions. They won't tell you the answer but they might give you a useful hint!

### **FINALLY ...**

Have a good break over the summer, but keep your 'Physics brain' ticking over!

We look forward to seeing you in September.