



PHYSICS A LEVEL SUPER-CURRICULAR

AIMING FOR THE TOP AND ASPIRING HIGH



Reading Tasks

Professor Povey perplexing problem by Thomas Povey

Thomas Povey has provided in this book enough super-curricular content to keep an aspiring mathematician, physicist, engineer or material scientist and their teachers happy for months. [University of Oxford]

QED by Richard Feynman

Quantum electrodynamics - or QED for short - is the theory that explains how light and electrons interact, and in doing so illuminates the deepest and most complex mysteries of the world around us. Thanks to Richard Feynman and his colleagues, it is also one of the rare parts of physics that is known for sure - a theory that has stood the test of time. In these entertaining lectures Feynman uses clear everyday examples to provide the definitive introduction to QED.

Rockets and ray guns: the scifi of the cold war by Andrew May

This entertaining book, offering a plethora of little-known facts and insights from previously classified military projects, shows how the real-world science of the Cold War followed in the footsteps of science fiction – and how the two together changed our perception of both science and scientists, and paved the way to the world we live in today.

The order of time by Carlo Rovelli

Time is a mystery that does not cease to puzzle us. Philosophers, artists and poets have long explored its meaning while scientists have found that its structure is different from the simple intuition we have of it. Bringing together science, philosophy and art, Carlo Rovelli unravels this mystery. This book shows that to understand ourselves we need to reflect on time - and to understand time we need to reflect on ourselves.

Horizons - a global history of science by James Possett

We are told that modern science was invented in Europe, the product of great minds like Copernicus, Newton, Darwin and Einstein. But this is wrong. Science is not, and has never been, a uniquely European endeavour. This book is a major retelling of the history of science from 1450 to the present day that explodes the myth that science began in Europe - instead celebrating how scientists from Africa, America, Asia and the Pacific were integral to this very human story.

Quantum physics and the power of the mind by Nancy Patterson

Quantum physics is an integral part of our lives and it is extremely important for us to have at least the basic knowledge on the subject. Most people struggle with it as there are scarcely any books on the topic that is compatible with the needs and demands of people who are just starting out as physicists and need a simple guide to understand the concepts.

A Short History of Nearly Everything by Bill Bryson

Bill Bryson describes himself as a reluctant traveller: but even when he stays safely in his own study at home, he can't contain his curiosity about the world around him. This book is his quest to find out everything that has happened from the Big Bang to the rise of civilization - how we got from there to here.

Feynman Lectures by Richard Feynman

This is a physics textbook based on some lectures by Richard Feynman, a Nobel laureate who has sometimes been called "The Great Explainer". The lectures were presented before undergraduate students at the California Institute of Technology (Caltech), during 1961–1963. This book is perhaps the most popular physics book ever written.

Hitchhiker's guide to the galaxy by Douglas Adams

This is the first book in the highly popular series of comic science fiction novels by British writer Douglas Adams. The saga mocks modern society with humour and cynicism and has as its hero a hapless, deeply ordinary Englishman (Arthur Dent) who unexpectedly finds himself adrift in a universe characterised by randomness and absurdity.

The joy of science by Jim Al Khalili

Today's world is unpredictable and full of contradictions, and navigating its complexities while trying to make the best decisions is far from easy. This book presents 8 short lessons on how to unlock the clarity, empowerment, and joy of thinking and living a little more scientifically, inviting readers to engage with the world as scientists have been trained to do.

The physics of superheroes by James Kakalios

This book provides an engaging and witty commentary while introducing the lay reader to both classical and cutting-edge concepts in physics, including: what Superman's strength can tell us about the Newtonian physics of force, mass, and acceleration; what villains like Electro and Magneto tell us about electricity and magnetism... and more!

Writing Tasks

Oxford Science Writing Competition

Enter this annual science competition from Oxford University. Click [here](#) for more information.

Article

Write an [article](#) on the subject of your choice, suitable for publication in a review journal (e.g. Physics review).

Listening Tasks

Imaginary World

[Imaginary worlds](#) podcast

Imaginary Worlds sounds like what would happen if NPR went to ComicCon and decided that's all they ever wanted to cover. Host Eric Molinsky uses his skills to create thoughtful, sound-rich episodes about science fiction, fantasy, and other genres of speculative fiction.

Point of Discovery

[Point of discovery podcast](#) - Behind every scientific discovery is a scientist (or 12) and a story. "Point of Discovery" takes you on a journey beyond WHAT we know to HOW we know it. Along the way, listeners will meet the sometimes quirky, always passionate people.

Physics World

[Physics world](#) podcast

Two regular podcast series. Physics World Weekly looks at the latest events and headlines in physics, as well as featuring short interviews with scientists and a team of journalists. Physics World Stories takes a more in-depth look at a topic that we feel warrants further coverage.

Watching Tasks

NASA TV

[NASA TV](#) - watch launches and online coverage of news at NASA.

Erin Brockovich film, available via Netflix.

A true story, Erin was never trained, or indeed meant to work in a lawyers office. she discovers some legal files that don't add up... On investigation she discovers an injustice, and decides, against the odds, to take on the bad guys on behalf of a poor and very ill community in a small town.

Research Tasks

Summer School

[Imperial college summer](#) schools and work experience opportunities - keep a lookout on their website.

Even more super curricular suggestions

Other areas to look at if you are a physicist are available via the [link](#) here.

Trips & Visits

Royal Observatory

[Royal Observatory](#), Greenwich, London.

Sign Up

Sign up for the [Royal Institution christmas lectures](#) in London.

Student Led Tasks

Join the [Institute of Physics](#) and take a look at their physics resources for A-level.

Interested in [becoming a medic](#)? take a look at this website for info on volunteering and exams.