 

**Physics Department**

**Super Curriculum**

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| **Reading (books and journals)** |
| How to Build a Car - *Adrian Newey* | An interesting autobiography written from the perspective of someone who grew up in Stratford- Upon-Avon and is now working as the chief technology officer of the Red Bull F1 Racing Team. |
| The Elegant Universe- *Brian Greene* | A general introduction to cosmology and string theory and the fundamental mathematics and physics that lead to our current understanding of the physical world. |
| Built: The Hidden Stories Behind our Structures - *Roma Agrawal* | Structural engineer Roma Agrawal looks into the evolution of construction through the lens of an engineer, with science explained in understandable terms. |
| Engineering for teens: A beginners book for aspiring engineers - *Pamela McCauley* | A look into what engineers do and how they drive society forward through mathematics and science. It is an introduction to the major engineering disciplines and their distinct specialties as well as famous engineers throughout history. |
| Surely You're Joking Mr Feynman: Adventures of a Curious Character- *Richard Feynman* | An autobiography and insight into the life’s work of Richard Feynman, a Nobel Prize winning Physicist, including the creation of the first atomic bomb and his work in the field of particle physics. |
| Moondust: In Search of the Men Who Fell to Earth - *Andrew Smith* | A book of accounts of the 9 remaining astronauts out of the 12 who made it to the surface of the moon and others involved in the space programme, looking at the era of the space race and the future of flight. |
| Quantum Theory Cannot Hurt You: Understanding the Mind-Blowing Building Blocks of the Universe - *Marcus Chown* | Chown gives analogies and facts to give an insight into some of the more exotic areas of Physics that require no prior knowledge, helpful for first meeting quantum physics in A-Level study. |
| A Short History of Nearly Everything *– Bill Bryson* | A modern classic, entailing Bryson’s research from the events of the Big Bang to the rise of civilisation, it begins to explain how everything in the universe is connected by some fundamental laws. |
| Thing Explainer: Complicated Stuff in Simple Words - *Randall Munroe* | A book of illustrated cartoon diagrams that should appeal to the scientific side of everyone. Munroe created a book of blueprints of objects, each one meticulously explained with only the most common 1000 words in the English Language. |
| 7 Brief Lessons on Physics*- Carlo Rovelli* |  A guide to the main ideas within and the birth of modern physics, written in the form of a short series of essays. |
| The World According to Physics *- Jim Al-Khalili* | Accessible to a general audience, this book discusses how the fundamental concepts of space, time and matter must be combined to form a full understanding of matter. |
| The Science of Formula 1 Design: Expert Analysis of the Anatomy of the Modern Grand Prix Car *- David Tremayne* | The physics behind the technical and creative aspects of modern racing cars written by F1 journalist David Tremayne and an illustrated insight into how they work. |
| Humble Pi: A Comedy of Maths Errors - *Matt Parker* | A look at some real world maths disasters that puts maths and physics into context and shows its practical applications and importance. |
| The Bedside Book of Physics - *Isaac McPhee* | An accessible history of some of the greatest achievements in physics. The Bedside Book Series are interactive guides and can be found on a variety of subjects. |
| A Brief History of Time *- (Hawkin, Stephen)* | A brief introduction to cosmology designed to inspire you and also leave you with the sense of wonder that our universe deserves. There is an updated version, called ‘A Briefer History of Time’ which includes more up to date info |
| The First Three Minutes *- Steven Weinberg* | A blow-by-blow account of the first 3 minutes of the universe. It is becoming dated as it misses out on some of the most important aspects of the start, however, it is aimed at the lay person, so is worth a read. |
| The Fifth Essence - *Lawrence Krauss* | Covers everything from Dark Matter to gravitation, lensing and so on. Helps to expand upon the A-Level course by have much more of a focus on the minutiae. |
| **Podcasts**  |
| Martha, one of our subject ambassadors will record a physics podcast which is released 2-3 times a term. It will discuss different physics topics that interest us, such as fusion or cosmology. We hope to interview members of staff about their journeys in physics. | See the relevant TEAMS channel for details |
| SENECA Learning<https://senecalearning.com/en-GB/>  | Search for Revise Physics on your podcast provider – short bitesize snippets on various topics. Is good for revision. |
| Great Mysteries of Physics<https://open.spotify.com/show/5ZMTYELxLUbChm3VRUC9o5>  | Available on Spotify, search for Great Mysteries of Physics by The Conversation. Covers fundamental questions in Physics. Extremely interesting and will leave you asking more questions |
| StarTalk Radio[StarTalk Radio Podcast | Podyssey](https://podyssey.fm/podcast/itunes325404506-StarTalk-Radio) | Available on Spotify, search for StarTalk Radio by Neil deGrasse Tyson. It has digestible but really interesting information which is told in a funny way. |
| Physics World Stories Podcast[Physics World Stories Podcast | Podyssey](https://podyssey.fm/podcast/itunes474208361-Physics-World-Stories-Podcast) | Available on Spotify, search for Physics World Stories Podcast. It has up-to-date information about interesting physics developments. There are lots of guest speakers who talk about a variety of topics. |
| Quanta Science Podcast[Quanta Science Podcast | Podyssey](https://podyssey.fm/podcast/itunes1021340531-Quanta-Science-Podcast) | Available on Spotify, search Quanta Science Podcast by Quanta Magazine. This podcast focuses on recounting in-depth news stories about maths, physics, biology and computer science. |
| The Infinite Monkey Cage[The Infinite Monkey Cage Podcast | Podyssey](https://podyssey.fm/podcast/itunes343580439-The-Infinite-Monkey-Cage) | Available on Spotify, search The Infinite Monkey Cage by BBC Radio 4. Brian Cox and Robin Ince host this podcast and discuss interesting physics questions with humour. |
| Daniel and Jorge Explain the Universe[The 4 Best Daniel and Jorge Explain the Universe](https://podyssey.fm/podcast/itunes1436616330-Daniel-and-Jorge-Explain-the-Universe)[Podcast Episodes | Podyssey](https://podyssey.fm/podcast/itunes1436616330-Daniel-and-Jorge-Explain-the-Universe) | Available on Spotify, search Daniel and Jorge Explain the Universe by iHeartPodcasts. This is a simple-to- understand podcast which discusses some of the universe’s most profound and still unanswered questions.  |
| University of Oxford Physics Podcasts[Physics | University of Oxford Podcasts](https://podcasts.ox.ac.uk/keywords/physics) | Available through the Oxford University website. This is an in-depth academic podcast explaining physics concepts and news with industry professionals. |
| **MOOCs and on-line opportunities**  |
| IOP lectures shared when on, covering a diverse range of topics and suitable for all.  | <https://www.gresham.ac.uk/search?for=physics> A brilliant range of lectures on some fascinating topics |
| Gresham’s offers videos on their own platform as well as youtube, covers large areas of Physics. | [End of life on earth lecture](https://www.gresham.ac.uk/whats-on/end-life) Prof Katherine Blundell |
| **Awards and competitions** |
| BPHO, Years 10 to 13. The BPHO also puts on an annual lecture to help students in their approach to attempting these challenging questions. | <https://www.bpho.org.uk/> <https://www.youtube.com/watch?v=xZNCZZx3v3E>  |
| Xmas competition | A competition only open to female students, you get a chance to win an expense paid trip to Grenoble in France. The competition takes the form of an essay. We have at least one winner each year, showing the quality of our students. |
| Physics Ambassadors plan to run a competition later in the year |  |
| **Places to visit**  |
| University of Warwick – Yr 12 and 13 lectures | Thorpe Park - Yr 10 and 12 |
| Jodrell Bank – transport allowing Yr 13 | Diamond light Yr 13 their schedule allowing |
| **Membership and affiliations** |
| Institute Of Physics <https://www.iop.org/>  | Ingenia <http://www.ingenia.org.uk/>  |
| **Classroom based opportunities** |  |
| All GCSE topics have SC projects | P1 – Energy generation around the worldP2 – Super conductorsP3 – History of TemperatureP4 – Development of the model of the atomP5 – The development of car safety featuresP6 – Quantum ComputingP7 – Edison vs TeslaP8 – Astronomers and Astrophysicists from around the world |
| KS3 offer being developed |  |
| A-Level offer being refined | Module 3: Projectile motion research, Egg safety experiments.Module 4: Development of circuitry |