

Going Beyond the Classroom: Super-Curricular Science Learning

One of the best ways for you stand out at Sixth-Form or in your first year at University is through the level of independent study you undertake outside of the classroom. Regardless of your future plans, the ability to extend yourself and research independently into your interests is an invaluable skill – this will support your university applications and/or future job applications and interviews.

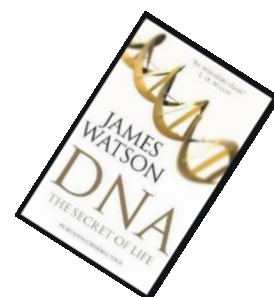
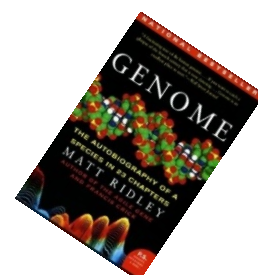
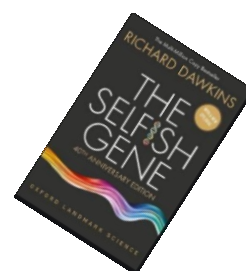
All universities expect more than just classroom knowledge, which is where super curricular activities come in; these are academic enrichment tasks that show you are interested in your studies beyond what is on the school syllabus.

I have put together a reading list to help you develop your interests in the fields of Biology, Chemistry and Physics. For those that are interested or considering a career in Medicine, there is a vast range of Fiction and Non-fiction books that give you an insight into the world of medicine.

Mrs Cheema

Biology Books

Author	Titles
Richard Dawkins	<ul style="list-style-type: none"> • The Selfish Gene • The Blind Watchmaker • Unweaving the Rainbow • Climbing Mount Improbable • The Ancestor's Tale
Steve Jones	<ul style="list-style-type: none"> • Y: The Descent of Men • In the Blood: God, Genes and Destiny • Almost Like a Whale: The 'Origin of Species' Updated • The Language of the genes
Matt Ridley	<ul style="list-style-type: none"> • Genome: The Autobiography of a Species in 23 Chapters • The Language of Genes Francis Crick: Discoverer of the Genetic Code • Nature Via Nurture: Genes, Experience and What Makes Us Human
James Watson	<ul style="list-style-type: none"> • DNA: The Secret of Life • The Double Helix: A Personal Account of the Discovery of the Structure of DNA
Lewis Thomas	<ul style="list-style-type: none"> • The Lives of a Cell • Notes of a Biology Watcher • The Medusa and the Snail • More Notes of a Biology Watcher
Barry Gibb	<ul style="list-style-type: none"> • The Rough Guide to the Brain (Rough Guides Reference Titles)
Charles Darwin	<ul style="list-style-type: none"> • The origin of species



Author	Biology Titles
Armand Marie Leroi	<ul style="list-style-type: none"> • Mutants • On the Form, Varieties and Errors of the Human Body
David S. Goodsell	<ul style="list-style-type: none"> • The Machinery of Life
Ernst Mayr	<ul style="list-style-type: none"> • This Is Biology • The Science of the Living World
George C. Williams	<ul style="list-style-type: none"> • Plan and Purpose in Nature
Steve Pinker	<ul style="list-style-type: none"> • The Language Instinct
Edward O Wilson	<ul style="list-style-type: none"> • The Diversity of Life
Richard Leaky	<ul style="list-style-type: none"> • The Origin of Humankind
Bill Bryson	<ul style="list-style-type: none"> • A Short History of Nearly Everything
Oliver Sachs	<ul style="list-style-type: none"> • The Man Who Mistook His Wife For A Hat
Daniel Chamovitz	<ul style="list-style-type: none"> • What A Plant Knows

Biology Websites	
1	www.ibiblio.org/virtualcell/index.htm – An interactive cell biology site
2	www.accessexcellence.org/RC/VL/GG – A web site showing illustrations of many processes of biotechnology
3	www.uq.oz.au/nanoworld – Visit the world of electron-microscopy
4	www.dnai.org/a/index.html – Explore the genetic code
5	http://nobelprize.org – Details of the history of the best scientific discoveries
6	http://nature.com – The site of the scientific journal
7	http://royalsociety.org – Podcasts, news and interviews with scientists about recent scientific developments
8	www.nhm.ac.uk – The London Natural History Museum’s website with lots of interesting educational material
9	www.bmj.com – The website of the British Medical Journal
10	www.bbc.co.uk/news/science_and_environment - The BBC news page for Science and the Environment

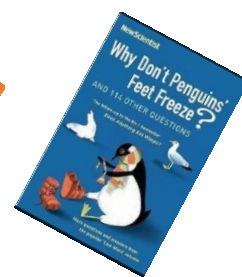
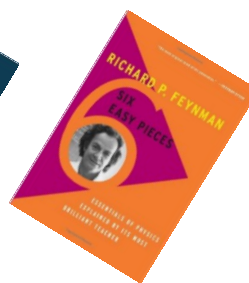
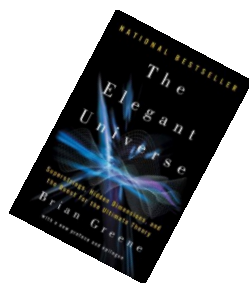
Chemistry Books



Author	Titles
Stephen T Beckett	<ul style="list-style-type: none"> • The Science of Chocolate
Charles S Sell	<ul style="list-style-type: none"> • The Chemistry of Fragrances
John Emsley	<ul style="list-style-type: none"> • The Consumer's Good Chemical Guide: Separating Facts from Fiction about Everyday Products • Better looking, better living, better loving: how chemistry can help you achieve life's goals
Richard Feynman	<ul style="list-style-type: none"> • The Pleasure of Finding Things Out
Hugh Aldersey-Williams	<ul style="list-style-type: none"> • Periodic Tales; The Curious Lives of the Elements
Sam Kean	<ul style="list-style-type: none"> • The Disappearing Spoon
Oliver Sachs	<ul style="list-style-type: none"> • Uncle Tungsten
John Emsley	<ul style="list-style-type: none"> • The Shocking History of Phosphorus: A Biography of the Devil's Element
Susan Aldridge	<ul style="list-style-type: none"> • Magic molecules – how drugs work
Philip Ball	<ul style="list-style-type: none"> • Elegant solutions: ten beautiful experiments in chemistry • H₂O – a biography of water • The ingredients – a guided tour of the elements • Stories of the invisible – a guided tour of the molecules

Chemistry Websites with video links	
1	Scientific American magazine www.scientificamerican.com/
2	NewScientist www.newscientist.com/
3	'The Mole' magazine for students and anyone inspired to dig deeper into Chemistry https://edu.rsc.org/eic/section/the-mole
4	Chemistry World Magazine www.chemistryworld.com/
5	Periodic Videos – short videos about each element by the University of Nottingham www.periodicvideos.com/
6	TED Talks on Chemistry from expert speakers www.ted.com/talks?topics%5B%5D=chemistry
7	Royal Society of Chemistry www.rsc.org.uk
8	Institution of Chemical Engineers www.icheme.org
9	Help for advanced level chemistry students www.chemguide.co.uk

Physics Books



Author	Titles
Brian Greene	<ul style="list-style-type: none"> The Elegant Universe
Chad Orzel	<ul style="list-style-type: none"> How To Teach Relativity To Your Dog
Richard P. Feynman	<ul style="list-style-type: none"> Six Easy Pieces
Bill Bryson	<ul style="list-style-type: none"> A short History of Nearly Everything
New Scientist	<ul style="list-style-type: none"> Why don't penguins' feet freeze?
Stephen Hawkin and Leonard Mlodinow	<ul style="list-style-type: none"> The Grand Design
Peter Ackroyd	<ul style="list-style-type: none"> Newton
Brian Cox and Jeff Forshaw	<ul style="list-style-type: none"> The Quantum Universe: Everything that can happen does happen

Physics websites	
1	Scientific American www.scientificamerican.com/physics/
2	Science Daily Physics News www.sciencedaily.com/news/matter_energy/physics/
3	New Scientist www.newscientist.com/article-topic/particle-physics/
4	IOP Science Journals https://iopscience.iop.org/journalList
5	Videos about the symbols of physics and astronomy www.sixtysymbols.com
6	Physics World www.physicsworld.com
7	Cern Accelerating science https://home.cern/science/physics
8	Centre for AstroPhysics www.cfa.harvard.edu/researchtopics
9	Physics Today https://physicstoday.scitation.org/journal/pto
10	Your guide to Physics on the web http://www.physics.org/

The Prospective Medical Student's Reading List

If you're interested in a career in Medicine, I recommend you get ahead on your reading for your future personal statements and applications. Pretty much any book can teach you about the human condition, whether it's fiction or non-fiction. Reading beyond a textbook is an important way to strengthen your motivation for medicine as well as understand that people are more than the diagnosis. A lot of books can give you an insight into the patient perspective as well as teaching you what being a doctor is like.

Which fiction books should I read?

1. ***The Loose Ends List (Carrie Firestone)***. This covers what it means to have a good death, surrounded by family and at a time of your choosing.
2. ***Eat, Sweat, Play (Anna Kessel)***. This describes what it is like to be a woman in sport and how sport changes the lives of those involved- not just in terms of their physical health, but in terms of what sport can do to help your mental health and just how closely being fit is linked to having a lifestyle that makes you happy.
3. ***Bad Pharma (Ben Goldacre)***. This frequently comes up on medical reading lists, but it's actually more helpful in teaching you just how closely research, medicine and money are linked.
4. ***Everything Everything (Nicola Yoon)***. Without spoiling the plot, this covers the life of a girl kept inside by her medical conditions and just how closely health is tied to our relationships and family dynamics.
5. ***Unbecoming (Jenny Downham)***. Covering three generations of women, this covers the whole spectrum of what it means to see a person as a whole person, and not just as a condition.
6. ***It Ends With Us (Colleen Hoover)***. Describing the thought processes behind domestic violence, this book shows us that seemingly simple decisions are always altered by the emotions we don't always see, something that commonly translates to medicine.
7. ***Every Last Word (Tamara Ireland Stone)***. This describes what it is like for the protagonist to live with a form of OCD and still conduct her day to day life.
8. ***Reasons to Stay Alive (Matt Haig)***. Written by the author in the depths of an overwhelming depression, this book tackles mental health head on.

Which non-fiction books should I read?

In terms of teaching you what medicine will be like, there are few books more accurate than those written by doctors, but you'll need to read a few of them to patch together a true idea of what practising is like. Classic books for teaching you these lessons are the ones everyone recommends, but they're clichéd recommendations for a reason – because they're true to life. These books include:

1. ***Trust Me, I'm a Junior Doctor (Max Pemberton)***
2. ***Where Does It Hurt? (Max Pemberton)***
3. ***Blood, Sweat and Tea (Tom Reynolds)***
4. ***In Stitches (Nick Edwards)***
5. ***Complications and Better (Atul Gawande)***
6. ***The House of God (Samuel Shem)***
7. ***The Other Side (Kate Granger)***
8. ***The Man Who Mistook His Wife for a Hat (Oliver Sacks)***
9. ***The Immortal Life of Henrietta Lacks (Rebecca Skloot)***