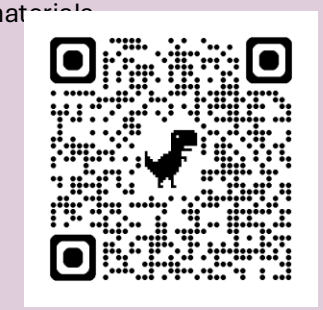
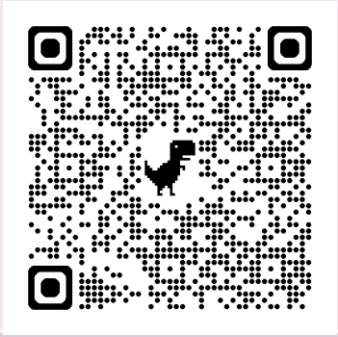
A level Biology	Task			
Autumn term	**Watch** one of the following films and **Write an** essay debating the relevant ethical implications. • **1997 Gattaca** – *involves genetic engineering and discrimination and eugenics.* • **2010 Never Let Me Go** – *Human cloning and organ donation* • **2011 Contagion** – *involves issues regarding resource allocation, quarantine and informed consent.*	Read one of the following **articles** and summarise the findings and present report either to your teacher or class. • Mechanisms of Antibiotic Resistance (doi: 10.1128/microbiolspec.VMBF-0016-2015) • **Hypertension and cardiomyopathy associated with chronic kidney disease: epidemiology, pathogenesis and treatment considerations** (https://doi.org/10.1038/s41371-022-00751-4)	Watch and make Cornell notes on. **TEDtalk: A simple new blood test that can catch cancer early**	**Write** a summary on the podcast called "**The Skeptics' Guide to the Universe**" episode called "**Vaccines. Autism. and The God He**" (Episode #605)
Spring term	**Task**: Write a detailed case study of a person with an autoimmune disease of your choice. Challenge: Explain the underlying immunological mechanisms behind autoimmunity and treatment options.	**Organize a debate** on a controversial topic covered in **Netflix documentary: Hack your health: The secrets of your gut (Rating PG)** Possible topics could be: • The use of biohacking techniques to enhance human performance. • Ethical considerations in genetic modification and CRISPR technology. • The balance between natural remedies and pharmaceutical interventions	**Research** and **prepare** a presentation on the life of Henrietta Lacks and HeLa cells in scientific research. Please include • Background and life of Henrietta Lacks. • The discovery and characteristics of HeLa cells. • Major scientific breakthroughs made possible by HeLa cells. • Ethical issues surrounding the use of Henrietta Lacks' cells without her consent.	**Explore** tools used to analyse genomic SARS-COV-2 data by **Completing** a 3 week online bioinformatics course (fre
Summer term	Create a **book report** for one of the following books and present to your Biology teacher or class. Options include (but not limited to): • Bad Science: Ben Goldacre • Invisible Women : Caroline Criado Perez • The ancestor's tale: Richard Dawkins • Genome: Matt Ridley • The Brain That Changes Itself: Norman Doidge • The Body, A guide for occupants: Bill Bryson	Watch and make Cornell notes on. **TEDtalk: How CRISPR lets us edit our DNA**	Create a presentation comparing different types of vaccines and their mode of action • **Live Attenuated vaccines** • **Inactivated vaccines** • **Viral vector vaccines** • **Nucleic acid vaccin** • **mRNA vaccines**	Sign up to **the Y12 Intermediate Biology Olympiad challenge** by emailing lbaxter@swanshurst.org between **May-June 2025** ☺

A level Chemistry	Task			
Autumn term	Complete 2020 question paper for the Cambridge challenge	Write a journal review on the Introductory book in Chemistry	Make a concept map based on Boron nitride	Draw the mechanisms of action of paracetamol, show your chemistry teacher
Spring term	Find the structure of various chemical substances .Assign these intro polar, non-polar categories	Write a brief report on the application of chemistry in toxicology	Create lecture notes on the application of mass spectroscopy in real life	Complete the Cambridge University challenge questions
Summer term	Complete the Cambridge University challenge questions	Complete this course and download your certificate	Complete this course and download your certificate	Complete Chemistry problem solving activities

A level Physics	Task			
Autumn term	Research the concept of magnetic domains and how they contribute to the magnetization of ferromagnetic materials 	Develop a computer model or physical simulation to illustrate the behavior of magnetic domains under different conditions (e.g., applying an external magnetic field, heating).	Attend a Physics lecture 	Write a detailed review based on this game 
Spring term	Create a mind map on a topic from the Cambridge university reading list 	Complete this course and download your certificate 	**Learn Basic Coding** •**Description:** Use platforms like Scratch or Code.org to learn the basics of coding. •**Resources:** Scratch, Code.org	Design a pair of "super glasses" that use lenses and mirrors to enhance vision in different ways (e.g., night vision, magnification).Challenge: Use lens equations to determine the focal lengths and magnifications of your lenses.
Summer term	Create a video game concept where players need to use principles of mechanics (e.g., conservation of momentum, rotational motion) to solve puzzles. Challenge: Provide the physics equations and solutions for key game mechanics.	Design a futuristic transportation system that uses electromagnetic induction (like a maglev train). Explain the physics behind it. Challenge: Calculate the forces, currents, and magnetic fields involved in your design.	Create a board game that involves navigating through different fields (electric, magnetic, gravitational). Explain how players can use field principles to their advantage. Challenge: Provide detailed rules and equations for calculating field strengths and forces in the game.	Imagine you're an engineer designing a new amusement park ride. Explain how you would use electric fields to create a thrilling experience. Challenge: Calculate the forces and potential differences involved in your design.