Year 11 Biology	Task			
Autumn term	Take part in National Science and Engineering Week. Each year, the National Science and Engineering Week celebrates science in all its forms, with events and projects you can get involved in	Watch and summarise **Netflix**: Pandemic Bill Nye: **Science Guy Planet Earth Life**	Write lecture notes from Oxford university lecture on gene editing	**Complete** this course of respiratory failure and **Download** your certificate
Spring term	**Presentation**: Compare the biodiversity of different local habitats by identifying and recording the variety of species present. a. Plan the investigation and write a detailed method (for either systematic or random sampling) b. Conduct a survey and use tables and graphs to illustrate data along with pictures in your final report c. Based on findings, develop recommendations for improving or protecting biodiversity.	Genetic Mutations and the Development of Cancer • Introduce concept of mutations • Explain concept of the normal cell cycle, including the roles of checkpoints, and how it is regulated • Define tumors and differentiate between benign and malignant tumors and how they develop • Research tumour suppressor genes (such as p53) and protooncogenes • Explain how mutations in these genes could lead to the development of cancer • Investigate real-world examples of cancers caused by genetic mutations. Look into the latest research and treatments that target these mutations. • Explore the ethical issues surrounding genetic testing for cancer predisposition.	Visit the library and use **New Scientist** or Biol**ogical Science Review** to research an area of Biology. Create a short **summary** of an article for your teacher to read	**Task**: Create a detailed comic strip that follows the journey of a protein through the endomembrane system. Include the processes of transcription and translation.
Summer term	Use your knowledge of natural selection and this TED:talk to **explain** why sickle cell trait is a selective advantage for individuals in Africa.	**Create** and present a short presentation on Cystic fibrosis,, protein synthesis and mutations	**Create a Genetic Family Tree** • **Activities:** Construct a family pedigree chart to trace the inheritance of specific traits (e.g., eye color, earlobe attachment). • **Analysis:** Use Mendelian genetics to predict trait distribution in future generations. • **Extension:** Discuss ethical considerations and advancements in genetic screening and therapy.	**Project Title:** The Role of Melanin and Melanosomes in Protecting Against Skin Cancer and the Importance of SPF • Explain the dangers of UV radiation and developement of skin cancer (give some statistics • the role of organelles melanosome and melanin pigment protect against UV damage • Explain importance of wearing SPF every 2 hours and present findings on the effectiveness of SPF

Year 11 Chemistry	Task			
Autumn term	Take part in a Chemistry competition	Make Cornell notes from the lecture	Explore the chemistry behind cooking techniques, such as caramelization, Maillard reaction, and protein denaturation.	Research chemiluminescence and its applications, such as glow sticks and forensic analysis.
Spring term	Research the chemistry behind bioplastics and how they are an eco-friendly alternative to traditional plastics.	Oxford research Turning orange into grapefruit Fuel cells inspired by nature video Chemistry in the garden video	University of Oxford competition	Complete this short course of chemical engineering
Summer term	Did chemistry help control tension in the trenches?	How does Chemistry control our taste of chocolates	Find the structure of ethanoic acid and ascetic acid, what information can you use from Chemspider, write a short summary.	A popular way to weed out unwanted pest plants, write a short summary.

Year 11 Physics	Task			
Autumn term	Make Cornell notes based on this lecture	Could it be magic? Answer the question on a flashcard	Visit the Owlcation website and read through the top ten physics equations, trying to understand precisely what they mean..	Design and conduct an experiment to measure the efficiency of a small-scale renewable energy system.
Spring term	Make Cornell notes based on	Watch an Oxford university lecture on Waves Write a short summary to show/present your class.	Complete part 1 of Quantum Physics	Complete part 2 of Quantum physics
Summer term	StarTalk channel on YouTube: Subscribe to this channel and write a review of a video	Task: 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.	Create a detective story where the protagonist uses magnetic principles to solve a mystery (e.g., finding hidden metal objects or understanding magnetic locks). Challenge: Explain the magnetic interactions and calculate the forces involved.	Attend a Physics lecture