Year Level: VCE **Subject: Physics Unit 1**

Semester: 1

Week	Unit	Learning focus
Head Start	Introduction to astronomy	Use and convert between scientific notation and different units in physics. Determine and use parallax angle to measure astronomical distances from Earth.
1	The Big Bang theory	Support the Big Bang theory using evidence from observations and calculations. Describe the major changes in the Universe over its lifetime and predict its possible future.
2	Matter and Antimatter	Describe the differences between matter and antimatter, and what happens when they collide. Describe how matter is represented in the standard model of physics.
3	Practice assessment task	Create a poster that educates the public about one subatomic particle and the evidence that supports this knowledge.
4	Assessment task	Create a poster that educates the public about the Big Bang theory and the evidence that supports it.
5	Introduction to radioactivity	Describe how radioactive decay occurs.
6	Alpha, beta and gamma radiation	Describe the different types of radioactive decay.
7	Nuclear energy	Describe how energy is created from radioactive decay.
8	Creating light	Describe what electromagnetic radiation is and how it is produced in synchrotrons.
9	Assessment task	Final test on the Universe, matter and radioactivity
10	Introduction to thermodynamics	Describe and apply the zeroth and first laws of thermodynamics. Describe the physics of heating and phase changes.
11	Conduction, convection and radiation	Describe the three ways heat is transferred.
12	Radiation laws	Use the mathematical laws that describe heating by radiation.
13	Climate of the Earth	Describe the factors that affect the climate and weather of the Earth. Interpret climate data to make supported conclusions about changes in climate.
14	Human interactions with the climate	Describe the different ways in which humans influence and interact with the climate.
15	Assessment task	Analyse climate data and make conclusions and suggestions to tackle changes in climate.
16	Introduction to electricity	Understand and apply the basic definitions involved in discussing simple electrical circuits. Use simple electrical laws to calculate the characteristics of given circuits.
17	Resistance	Understand resistance and apply mathematical laws to calculate the resistance in various circuits.
18	Transducers	Describe some of the different types of transducers.
19	Household circuitry	Describe the ways household electrical systems differ from simple electrical circuits.
20	Assessment	Create and analyse a simple electrical circuit.

Subject: Physics
Unit 2

Semester: 2

WEEK	TOPIC	LEARNING FOCUS
1	Detailed study: Life on other worlds	Explain what SETI is and how it works. Argue why an alien's home world is likely or not likely to actually harbour life in the real world. Investigate and explain in 3 paragraphs why the moon Europa is a likely place that life exists. Create a colourful poster to summarise the Drake equation.
2	Detailed study: Life on other worlds	Create a colourful booklet on the Fermi paradox. Research how exoplanets such as those in the Gliese 581 system are found and summarise this research into a report.
3	Vectors & scalars and Newton's three laws of motion	Describe and use vectors and scalars in motion. Describe and use Newton's three laws of motion.
4	Springs and translational equilibrium	Calculate forces due to springs using Hooke's law. Use translational equilibrium to calculate forces and motion.
5	Torques, rotational equilibrium and static equilibrium	Describe and calculate torques. Use rotational and static equilibrium to calculate torques, forces and motion.
6	Forces and torques mini-SAC preparation and SAC	Prepare a comprehensive and suitable "cheat sheet" on forces and torques. Answer multiple choice and short answer questions on forces and torques.
7	Straight-line motion	Calculate straight line motion on the horizontal and vertical planes.
8	Projectile motion	Describe and calculate projectile motion.
9	Inclined planes and banked tracks	Calculate motion of objects on inclined planes. Calculate motion of objects as they move around banked tracks.
10	Straight-line motion mini-SAC preparation and SAC	Prepare a comprehensive and suitable "cheat sheet" on straight-line motion Answer multiple choice and short answer questions on straight-line motion.
11	Unit 2 revision	Revise the Unit 2 concepts and apply them to past exam questions. Complete a Unit 2 Trial exam under exam conditions. Review the Trial Exam in class.
12	Unit 2 exams	Complete a Unit 2 exam.
13	Extended investigation preparation	Understand the concepts of the scientific method. Create a plan, using the scientific method, to undertake an extended investigation.
14	Extended investigation execution	Follow, modify and adapt a plan to carry out an extended investigation.
15	Extended investigation report poster	Create a poster to summarise an extended investigation.