Year 10 Physics Learning Outcomes

Unit 4: Radioactivity

- Explain what causes radiation and what risks there could be.
- Explain the observations that led to the current structure of the atom.
- Describe the different ways radiation can be emitted.
- Explain the properties of the different types of radiation.
- Interpret graphs about half life.
- Explain the features of radiation that makes them usable for medicine.
- Explain how we can get electricity from nuclear radiation.
- Describe the differences between Nuclear fission and fusion.
- Explain why we should still use nuclear power.

Unit 5: Forces

Unit 5.1: Forces in Balance

- Explain the difference between scalars and vectors.
- Classify forces into contact and non-contact.
- Draw and calculate resultant force.
- Calculate and explain moments.
- Explain how levers and gears work and why we use them.
- Identify the centre of mass for a variety of objects.
- Explain why things balance in terms of forces.
- Calculate clockwise and anti-clockwise moments.
- Use the parallelogram of forces to solve various real life situations.
- Calculate the resultant force using the resolution of forces idea.

Unit 5.2: Motion

- Draw a distance-time graph and explain all of the sections.
- Explain the difference between distance-time graphs and velocity-time graphs.
- Calculate acceleration.
- Calculate the gradient and area under a velocity-time graph.
- Explain and calculate constant acceleration using an equation.

Unit 5.3: Force and Motion

- Explain Newton's second law and use the equation for a variety of real life situations.
- Describe fully the motion of a falling object.
- Explain how forces affect braking on objects and vehicles.
- Calculate and explain the effects of momentum.

- Explain the principle of conservation of momentum and apply it to various situations.
- Explain the effect of impulse.
- Explain how the safety features in a car help to keep us safe.
- Explain Hooke's law and apply it to various materials.

Unit 5.4: Force and Pressure

- Decide which types of objects will cause the most pressure, based on mass and surface area.
- Calculate pressure.
- Explain what affects pressure in a liquid.
- Explain what causes atmospheric pressure and how it changes with altitude.
- Decide what causes things to float or sink by discussing pressure, density and upthrust.

Unit 6: Waves

Unit 6.1: Waves

- Compare transverse and longitudinal waves in terms of direction of vibration and propagation.
- Perform calculations involving rearrangements of the period equation and the wave speed equation.
- Describe a method to measure the frequency of a wave in a liquid.
- Describe the relationship between the angle of incidence and angle of reflection.
- Explain refraction in terms of changes in the speed of waves when they move between one medium and another.
- Explain real world uses of ultrasound.
- Explain how the detection of seismic waves can be used to investigate the structure of planet Earth.

Unit 6.2: Electromagnetic Waves

- Draw and label EM spectrum.
- Justify the use of a particular part of the EM spectrum for a particular job.
- Explain how radio waves are used to send information across long distances.
- Evaluate uses of a particular part of the EM spectrum by consideration of dangers.
- Evaluate the use of x-rays.

Unit 6.3: Light

- Explain how the law of reflection works so that we can see ourselves in mirrors.
- Explain how refraction works.
- Suggest the apparent colours of objects based on the light they are in.
- Explain using ray diagrams how lenses work.