

Christchurch Boys' High School

Year 12 Physics - Course Content

The Year 12 course develops the skills and knowledge to make sense of common physical phenomena. It consists of four units of varying lengths of time.

- 1. Foundation Physics**
The purpose of this unit is the development of skills to carry out investigations, take measurements of physical quantities and interpret collected data.
- 2. Dynamic Physics - Motion, Force, Momentum and Energy**
The purpose of this unit is the development of skills and knowledge to explain physical situations such as movement of athletes, cars and cyclists; accelerating dragsters; stretching bungee cords; ranges of cricket ball throws; yacht movement when tacking into the wind.
- 3. Electromagnetic Effects - Statics, Electricity and Electromagnetic Effects**
The purpose of this unit is the acquisition of skills and knowledge to construct electrical circuits, explain the behaviour of various electrical components; and to demonstrate an understanding of the links between moving electric charges and their resulting magnetic fields.
- 4. Types of Radiation - Reflection, Refraction, Waves and Atomic Physics**
The purpose of this unit is the acquisition of skills and knowledge to explain the importance of waves in our everyday lives; ocean, sound, earthquake and electromagnetic waves, the usefulness of waves in explaining the behaviour of light; the nature of radioactivity - its dangers and uses.

The study physics in this course does use mathematics for the solution of numerical problems. This is quite straight forward and generally involves the solution of an unknown in an equation such as $V = IR$. Calculators are a big help.

To assist you to make the most of the year you should set yourself some personal goals. Here are some examples which should be included in this list:

- Turn up to class on time with the required materials.
- Meet deadlines and complete set work to the required standard.
- Keep up to date (this is especially important for those with other school commitments).
- Maintain the four C's in the classroom; courtesy, commonsense, consideration of others and commitment to your work.
- Keep the laboratory clean and tidy.

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Year 12 Physics - Assessment Programme

The Year 12 Physics course will be assessed using the Level 2 Achievement Standards as follows:

Ref.	Title	Credits	Assess. Mode
2.1 90252	Take measurements of physical quantities and analyse data graphically to determine a relationship. <ul style="list-style-type: none">• Measure at least 3 different quantities, with 3 different types of measuring instruments.• Familiar with linear, square, inverse and inverse square graphs.	4	Internal Exam Block Term 2
2.3 90254	Demonstrate understanding of waves. <ul style="list-style-type: none">• Light reflection and refraction.• Wave reflection, refraction, diffraction and interference.• Superposition, diffraction, standing waves.	4	External
2.4 90255	Demonstrate understanding of mechanics. <ul style="list-style-type: none">• Motion, vectors, kinematics, projectile and circular motion.• Forces, Newton's laws, equilibrium and springs• Momentum, impulse, collisions and conservation of energy.	6	External
2.5 90256	Demonstrate understanding of atoms and radioactivity. <ul style="list-style-type: none">• Models of the atom and Rutherford's gold foil experiment.• Radioactive decay and half-life, penetrating power.• Conservation of atomic and mass number in α, β, γ emission	2	External
2.6 90257	Demonstrate understanding of electricity and electromagnetism. <ul style="list-style-type: none">• Electric fields and strength, electric force and electric potential.• DC series and parallel circuits, Ohm's law and diodes.• Magnetic forces, induced voltage and simple generators.	5	External
2.7 90258	Demonstrate understanding of physics in an integrated context. <ul style="list-style-type: none">• Content areas can include waves, mechanics, atoms and radioactivity, DC electricity and electromagnetic effects, gas laws, heat or any other special topic.	3	Internal Exam Block Term 3

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HOD Physics