# Physics NCEA Level 3

**Course Description:**
Students will gain a unique and valuable perspective on the world and universe we live in through studying Physics. They will investigate and gain insight into the inter-relationships between quantities that define and control our physical world. Throughout the year there will be an opportunity to sit two internal assessment standards and three external achievement standards. AS91523 is optional. **The course offers 22 credits.**

**Content**
Topics covered include:

- Mechanics
- Waves
- Modern Physics (Atomic Systems and Relativity)
- Electromagnetism

Mechanics is taught first (ending with simple harmonic oscillators). The Waves topic follows (starting with wave sources that are simple harmonic oscillators and ending with the interference phenomenon). The third topic is Modern Physics (starting with the use of the interference phenomenon to study the structure of atoms and ending with the theory of everything - the forces and their fields). The final topic is Electromagnetism (one of the most understood fields that permeate our universe).

**Prior Learning Required**

- *Mathematics* – Level 2 Algebra (rearranging equations), Graphs (gradients, equations of straight lines), *Calculus* (differentiation - useful, but not essential), Trigonometry (sine, cosine, tan, SOHCAHTOA).
- *Physics* – minimum of 'Achieved' in two of Level 2 Mechanics, Waves and Electricity (all three preferred). Recommended Co-requisites (if planning to carry on to tertiary study): *Mathematics* – Level 3 Calculus
- Please enrol if you meet the prerequisites. Learning via VC requires self-motivation, determination and a desire to succeed. Physics is invaluable, but, conceptually, very challenging for many students; for this reason, we aim to run two lessons per week. All class members should have a solid foundation from Level Two that includes Mechanics or Electromagnetism (preferably both).

**Learning Resources & Associated Costs:**

- Level 3 Physics Sci Pad Externals and Internals workbooks. Lesson Videos and other supporting resources will be supplied. Those resources include whiteboard notes, useful software, and YouTube-type clips. List of glossary words. At times the live sessions will not run, or individual students are unable to attend. The provided lesson videos provide the core material.
- The resources are set up so that an able and motivated student can learn independently using the lesson videos and booklets, if unable to attend the two live sessions per week.

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**Assessment:**

| Std No. | Version | Standard Title | Completion date | Type | Credits |
|---|---|---|---|---|---|
| AS 91527 | 2 | 3.7 Use Physics knowledge to develop an informed response to a socio-scientific issue | Term 1 | I | 3 |
| AS 91525 | 2 | 3.5 Demonstrate understanding of Modern Physics | Term 2 | I | 3 |
| AS 91523 | 2 | 3.3 Demonstrate understanding of wave systems (Optional) | Nov exam | E | 4 |
| AS 91524 | 2 | 3.4 Demonstrate understanding of mechanical systems | Nov exam | E | 6 |
| AS 91526 | 2 | 3.6 Demonstrate understanding of electrical systems | Nov exam | E | 6 |

I = Internally Assessed | E = Externally Assessed