**Year 10 Extension Physics Program 2016**

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| **WEEK** | **STUDENT OUTCOMES** | **ACTIVITIES** | **ASSESSMENTS** | **GLOSSARY WORDS** |
| 1. | * The motion of objects can be described and predicted using the laws of physics [(ACSSU229)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU229) * Gathering data to analyse everyday motions produced by forces, such as measurements of distance and time, speed, force, mass and acceleration. | Chapter 8.1  Booklet 1 – Describing motion |  | Displacement  Distance  Error  Gradient  Instantaneous speed  Precision  Random Error  Reaction time  Scalar quantity  Speed  Systematic error  Vector quantity  Velocity |
| 2. | * Science Inquiry Skills (ACSIS198-208) * Gathering data to analyse everyday motions produced by forces, such as measurements of distance and time, speed, force, mass and acceleration. | Chapter 8.2  Booklet 2 – Changes in speed | **INVESTIGATION -** Speed ticker tape | Acceleration  Air resistance  Terminal velocity |
| 3. | * Science Inquiry Skills (ACSIS198-208) * Gathering data to analyse everyday motions produced by forces, such as measurements of distance and time, speed, force, mass and acceleration |  | **INVESTIGATION -** Acceleration ticker tape |  |
| 4. | * Recognising that a stationary object, or a moving object with constant motion, has balanced forces acting on it * Using Newton’s Second Law to predict how a force affects the movement of an object * Recognising and applying Newton’s Third Law to describe the effect of interactions between two objects [(ACSSU229](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU229)) | Chapter 8.3  Booklet 3 – Newtons Laws of Motion |  | Inertia  Newtons 1st law of motion  Newtons 2nd law of motion  Newtons 3rd law of motion |
| 5. | * Recognising that the Law of Conservation of Energy explains that total energy is maintained in energy transfer and transformation * Recognising that in energy transfer and transformation, a variety of processes can occur, so that the usable energy is reduced and the system is not 100% efficient * Comparing energy changes in interactions such as car crashes, pendulums, lifting and dropping   [(ACSSU190)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU190) | Chapter 8.4  Booklet 4 – Energy changes |  | Efficiency  Elastic potential energy  Gravitational potential energy  Kinetic energy  Law of conservation of energy  Potential energy  Power  Work |
| 6. | Revision | Chapter 8 | **TEST -** Test One (Mid topic test) |  |
| 7. | * Using Newton’s Second Law to predict how a force affects the movement of an object * Advances in scientific understanding often rely on technological advances and are often linked to scientific discoveries [(ACSHE192)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSHE192) | Chapter 9.1  Forces in a structure | **EXAM** | Balanced forces  Unbalanced forces  Weight  Compression  Tension  Cable  Stress  Area  Necking  Taut |
| 8. | * using models to describe how energy is transferred and transformed within systems [(ACSSU190)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU190) | Chapter 9.2 & 9.3  Taller & Taller  Bridging the gap | **ASSIGNMENT –** Bridges | Pyramid  Skyscraper  Stability  Centre of mass  Centre of gravity  Base  Post and beam  Roman arch  Gothic arch  Bridge  Beam bridge  Arch bridge  Suspension bridge  Cable stayed bridge  Cantilever bridge  Bowstring arch bridge  Truss |
| 9. | Revision |  |  |  |
| 10. | Exam/Test 2 |  | **EXAM/TEST –** Test 2 |  |

**ASSESMENTS**

Speed ticker Investigation 10

Acceleration ticker Investigation 10

Mid Topic Test/Exam 30

Bridges 10

End Topic Test 30

Homework 10