

**Sing Yin Secondary School**  
**Physics Teaching Syllabus (2016-2017)**

**Form Four (for 4C, 4D & 4E)**

Active Physics 2: Force and Motion

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Active Physics 3: Wave Motion

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Pearson

**Aims**

This course of study should help students:

- ① learn the key knowledge and method of Physics in both qualitative and quantitative ways,
- ② apply what they learn to solve problems rationally in their academic and daily life,
- ③ deepen their sense of carefulness and safety,
- ④ cultivate a respect for facts,
- ⑤ acquire a love of logical deduction,
- ⑥ develop an interest in Physics by realizing its power,
- ⑦ appreciate the relationship between physical science and other disciplines, and
- ⑧ develop skills for making scientific inquiries.

**Topics****Time allotted (cycle)**

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| 1. Laboratory safety regulations, general introduction<br>Ideal gas law  | 0.5 |
| 2. Position and movement <ul style="list-style-type: none"> <li>- Time and length</li> <li>- Distance travelled and displacement</li> <li>- Speed, velocity and acceleration</li> <li>- Motion graphs</li> <li>- Recording and analyzing motion</li> <li>- Equations of uniformly accelerated motion</li> <li>- Vertical motion under gravity</li> </ul> | 2   |
| 3. Force and Newton's law of motion <ul style="list-style-type: none"> <li>- Newton's first law of motion</li> <li>- Force</li> <li>- Newton's second law of motion</li> <li>- Further applications of Newton's second law</li> <li>- <b>[Static fluid pressure and Archimedes' Principle]</b></li> </ul>  | 2.5 |
| 4. Forces in a plane and moment <ul style="list-style-type: none"> <li>- Addition and resolution of forces in a plane</li> <li>- Newton's laws of motion in a plane</li> <li>- Moment of force</li> <li>- Equilibrium and stability</li> </ul>   | 2   |
| 5. Work, Energy and Power <ul style="list-style-type: none"> <li>- Work and energy</li> <li>- Kinetic energy and potential energy</li> <li>- Conservation of energy</li> <li>- Power</li> </ul>  | 2   |

6. Momentum	2
- Linear momentum and impact	
- Impulse	
- <b>[Newton's second law in the form of <math>dp/dt</math>]</b>	
7. Projectile Motion	2
- Independence of horizontal and vertical motions	
- Path of projectile motion	
- Quantities of projectile motion	
8. Uniform Circular Motion	2
- Describing uniform circular motion	
- Angular velocity and centripetal acceleration	
- Centripetal force	
- <b>(Angular acceleration, non-uniform circular motion and centrifugal force)</b>	
9. Gravitation	2
- Newton's law of gravitation	
- Gravitational field	
- Circular motion under gravity	
10. Ideal Gas	2
- Ideal gas law	
- Kinetic theory	
11. Wave motion	1
- Description of waves	
- Transverse and longitudinal travelling waves	
- Factors affecting speed of wave	
12. Properties of waves	1
- Reflection and refraction	
- Diffraction and interference	
- Stationary wave	
13. Reflection	1
- Laws of reflection	
- Regular and diffuse reflection	
- Image formation by plane mirrors	
14. Refraction	1
- Laws of refraction	
- Total internal reflection	
	<b>23</b>

**(Optional topics):** If time allows, these topics should be mentioned qualitatively.

**[Topics added for challenge class]:** These topics are out of syllabus but useful for the students who want to challenge themselves.

Signature of Teacher-in-charge:

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Checked by:

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