

Diploma Program Outline (2025-2027)

Physics SL and HL

Week	Week of...	Topic / Unit / Text	Content / Skill Development	Graded Assessments
Year 1 Semester 1				
1	August 18	Introduction to Physics	<ul style="list-style-type: none"> IB Physics overview, syllabus structure, IA introduction, measurement & uncertainties 	
2	August 25	Units & Vectors	<ul style="list-style-type: none"> SI units, vector addition & resolution 	Practice problems
3	September 2	Kinematics I	<ul style="list-style-type: none"> Displacement, distance vs. displacement, velocity, acceleration, uniform/non-uniform motion 	Problem related to suvat
4	September 8	Kinematics II	<ul style="list-style-type: none"> Equations of motion (SUVAT), conditions of validity, average vs. instantaneous values 	Quiz
5	September 15	Projectiles I	<ul style="list-style-type: none"> Horizontal and oblique projection, independence of vertical/horizontal motion 	Lab activity – projectile simulation
6	September 22	Projectiles II	<ul style="list-style-type: none"> Effects of air resistance: path, velocity, acceleration, terminal velocity 	Reflection task on kognity
7	September 30	National Holiday		
8	October 9	Forces I	<ul style="list-style-type: none"> Newton's Laws of Motion, force pairs, free-body diagrams 	Problem set
9	October 13	Forces II	<ul style="list-style-type: none"> Translational equilibrium, contact & field forces (normal, friction, drag, buoyancy, gravity, electric, magnetic) 	quiz
10	October 20	Momentum I	<ul style="list-style-type: none"> Linear momentum, impulse, Newton's 2nd law derivation 	Physics SA Unit A-Part1
11	October 27	Momentum II	<ul style="list-style-type: none"> Collisions & explosions (1D SL, 2D HL), elastic & inelastic 	Lab: collision simulation
12	November 3	Circular Motion I	<ul style="list-style-type: none"> Uniform circular motion, centripetal force/acceleration 	Problem set
13	November 10	Circular Motion II	<ul style="list-style-type: none"> Vector diagrams, velocity/acceleration/force direction, angular speed & frequency 	Quiz
14	November 17	Energy	<ul style="list-style-type: none"> Work, conservation of energy, mechanical energy, Sankey diagrams 	Physics FA Unit A-Part2
15	November 24	Week Without Wall		
16	December 1	Power & Efficiency I	<ul style="list-style-type: none"> Work done, KE, GPE, elastic PE, conservation 	Problem set
17	December 8	Power & Efficiency II	<ul style="list-style-type: none"> Power as rate of work/energy, efficiency, energy density of fuels 	Physics SA Unit A-Part2
18	December 15	Mini IA practice	<ul style="list-style-type: none"> Provide some material and ask the students to plan a lab with it 	IA practice
19	December 22	Christmas & New Year		
20	December 30	Christmas & New Year		
21	January 5	Rigid Body Mechanics (HL) I	<ul style="list-style-type: none"> Torque, rotational equilibrium, angular dynamics 	Physics FA Unit B-Part 2
22	January 12	Rigid Body Mechanics (HL) II	<ul style="list-style-type: none"> Moment of inertia, angular momentum, rotational KE 	
23	January 19	Thermal energy transfers I	<ul style="list-style-type: none"> Molecular theory, temperature scales, changing temperature and changing phase 	
Year 1 Semester 2				
1	January 26	Thermal energy transfers II	<ul style="list-style-type: none"> Thermal energy transfer, black body emission 	
2	February 2	Greenhouse effect	<ul style="list-style-type: none"> Energy from the Sun, Energy balance in the Earth surface 	Physics SA Unit B- Part 1
3	February 9	Gas laws I	<ul style="list-style-type: none"> Ideal Gas behaviour 	Simulation Lab
4	February 16	Chinese New Year		
5	February 23	Chinese New Year		
6	March 2	Gas laws II	<ul style="list-style-type: none"> Gas Laws 	
7	March 9	Thermodynamics (HL) I	<ul style="list-style-type: none"> Internal energy and work done, Laws of Thermodynamics 	Physics FA Unit B-Part 2
8	March 16	Thermodynamics (HL) II	<ul style="list-style-type: none"> Heat engines and the Carnot cycle 	
9	March 23	Currents and circuits I	<ul style="list-style-type: none"> Conductors, p.d. and current, resistance, resistivity and Ohm's law 	Experiments with circuits
10	March 30	Currents and circuits II	<ul style="list-style-type: none"> Series and parallel circuits, circuits and power, cells and internal resistance 	Physics SA Unit B-Part 2
11	April 6	Easter Holiday		
12	April 13	Simple Harmonic motion	<ul style="list-style-type: none"> SHM, Simple pendulums and mass- spring systems 	Activity: SHM in spring and mass
13	April 20	Simple Harmonic motion (HL)	<ul style="list-style-type: none"> Position and velocity, Energy 	
14	April 27	Wave Model I	<ul style="list-style-type: none"> Transverse and longitudinal waves, describing waves 	Activity: water waves and sound waves
15	May 4	Wave Model II	<ul style="list-style-type: none"> Sound waves and EM waves 	

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16	May 11	Wave Phenomena I	<ul style="list-style-type: none"> Reflection, refraction and diffraction, Snell's law, critical angle and total internal reflection 	Simulation lab
17	May 18	Wave Phenomena II	<ul style="list-style-type: none"> Superposition of waves and Young's double slit interference 	
18	May 25	Final Exam Week		
19	June 1	IA Practice		
20	June 8	IA Practice		
21	June 15	Collaborative Science Project		
Year 2 Semester 1				
1	August 17	Wave Phenomena (HL)	<ul style="list-style-type: none"> Single and multi-slit diffraction 	
2	August 24	Wave Phenomena (HL)	<ul style="list-style-type: none"> Single and multi-slit diffraction 	
3	September 1	Standing waves and resonance I	<ul style="list-style-type: none"> Standing waves in strings and pipes 	Experiment for standing waves
4	September 7	Standing waves and resonance II	<ul style="list-style-type: none"> Resonance and damping 	Physics FA Unit C
5	September 14	Doppler effect	<ul style="list-style-type: none"> Light and Doppler effect 	
6	September 21	Doppler effect (HL)	<ul style="list-style-type: none"> Calculating Doppler 	Physics SA Unit C
7	October	National Holiday		
8	October 12	Gravitational fields	<ul style="list-style-type: none"> Kepler's laws and Newton's universal law of gravitation, gravitational field, gravitational field lines and gravitational field strength 	
9	October 19	Gravitational fields (HL)	<ul style="list-style-type: none"> Gravitational potential energy and gravitational potential, equipotential surfaces, orbital and escape speed 	Physics FA Unit D-Gravitational field
10	October 26	IA data collection	<ul style="list-style-type: none"> 	
11	October	Electric and magnetic fields I	<ul style="list-style-type: none"> Electric charge, Coulomb's law 	
12	November	Electric and magnetic fields II	<ul style="list-style-type: none"> Electric fields, magnetic fields 	
13	November	Electric and magnetic fields (HL)	<ul style="list-style-type: none"> Electric potential energy, equipotential surfaces 	Physics FA Unit D
14	November	IA data collection	<ul style="list-style-type: none"> 	Physics SA Unit D
15	November	Induction (HL) I	<ul style="list-style-type: none"> Motion of a charged particles in uniform electric field and magnetic field 	
16	December	Induction (HL) II	<ul style="list-style-type: none"> Magnitude of the magnetic force, current and magnetic fields 	
17	December	IA evaluation	<ul style="list-style-type: none"> 	Physics SA Unit D (HL)
18	December	Structure of atom	<ul style="list-style-type: none"> The nucleus and atomic energy levels 	
19	December	Christmas & New Year		
20	January	Christmas & New Year		
21	January	Structure of atom (HL)	<ul style="list-style-type: none"> Deviations from Rutherford scattering and the Bohr model for hydrogen 	
1	January	Quantum physics I (HL)	<ul style="list-style-type: none"> The particle nature of light, the wave nature of matter 	
2	January	Radioactive decay	<ul style="list-style-type: none"> Radioactive decay, nuclear radiation, half-life 	Physics FA Unit E
3	January	Chinese New Year		
4	February	Chinese New Year		
5	February	DP Mock Examination Review		
6	February	DP Mock Examination		
7	February	Radioactive decay (HL)	<ul style="list-style-type: none"> Nuclear energies, radioactive decay law, nuclear stability 	
8	March	Fission & Fusion and stars I	<ul style="list-style-type: none"> Nuclear fission and power plants, fusion in stars 	
9	March	Fission & Fusion and stars II	<ul style="list-style-type: none"> HR diagram, star radius, measuring distances in space 	
10	March	Galilean and Special relativity (HL)	<ul style="list-style-type: none"> Reference frames and Galilean relativity, special relativity and time dilation and length contraction, Lorentz transformation and the space-time intervals, Space-time diagrams and simultaneity 	Physics SA Unit E
11	March	Review		
12	March	Review		
13				
14	April	Easter Holiday		
15	April			
16	April - May	IB DP May Examination		