

KS5 Physics curriculum plan

- This document should be viewed in conjunction with the current academic year teaching schedule, to see which topics are taught by which teacher and the overall sequence.
- Students follow a homework workbook schedule each week, which they self assess, and this is checked once per fortnight to make sure students are on track.
- Other homework tasks based on exam questions are set throughout the chapters & teacher/self assessed as best fits the timing.
- The first marked assessment is the initial exam.
- All end of chapter tests are 1 hour and use a mix exam question styles
- Chapter/lesson headings are taken from the textbook for each year

A level year 1 – Oxford - Jim Breithaupt

Section 1 Particles and Radiation

1 Matter and Radiation

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Inside the atom		
2	Stable and unstable nuclei		
3	Photons		
4	Particles and antiparticles		
5	Particle interactions		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

2 Quarks and leptons

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	The particle zoo		
2	Particle sorting		
3	Leptons at work		
4	Quarks and antiquarks		
5	Conservation rules		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

3 Quantum phenomena

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	The photoelectric effect		
2	More about photoelectricity		
3	Collisions of electrons with atoms		
4	Energy levels in atoms		
5	Energy levels and spectra		
6	Wave-particle duality		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

Section 2 Waves and optics

4 Waves

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Waves and vibrations		
2	Measuring waves		
3	Wave properties 1		
4	Wave properties 2		
5	Stationary and progressive waves		
6	More about stationary waves on strings		
RP1	Investigating the frequency of a vibrating string or wire	FAR marking of RP write up	
7	Using an oscilloscope		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

5 Optics

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Refraction of light		
2	More about refraction		
3	Total internal reflection		
4	Double slit interference		
RP2	Investigating interference effects from a diffraction grating & Young's double slits	FAR marking of RP write up	
5	More about interference		
6	Diffraction		
7	The diffraction grating		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

Section 3 Mechanics and materials

6 Forces in equilibrium

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Vectors and scalars		
2	Balanced forces		Exam Qs
3	The principle of moments		
4	More on moments		Exam Qs
5	Stability		
6	Equilibrium rules		
7	Statics calculations		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

7 On the move

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Speed and velocity		Exam Qs
2	Acceleration		
3	Motion along a straight line at constant acceleration		
4	Free fall		
RP3	Determination of g by a free-fall method	FAR marking of RP write up	
5	Motion graphs		
6	More calculations on motion along a straight line		
7	Projectile motion 1		Activity sheet
8	Projectile motion 2		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

8 Newton's laws of motion

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Force and acceleration		
2	$F = ma$		
3	Terminal speed		
4	On the road		
5	Vehicle safety		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

9 Force and Momentum

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Momentum and impulse		
2	Impact forces		
3	Conservation of momentum		
4	Elastic and inelastic collisions		
5	Explosions		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

10 Work, energy and power

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Work and energy		
2	Kinetic energy and potential energy		
3	Power		
4	Energy and efficiency		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

11 Materials

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Density		
2	Springs		
3	Deformation of solids		
RP4	Determining the Young modulus of a material	FAR marking of RP write up	
4	More about stress and strain		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

Section 4 Electricity

12 Electric current

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Current and charge		
2	Potential difference and power		
3	Resistance		
RP5	Determining the resistivity of a wire	FAR marking of RP write up	
4	Components and their characteristics		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

13 DC circuits

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Circuit rules		
2	More about resistance		
3	Electromotive force and internal resistance		
RP6	Investigating the emf & internal resistance of electric cells & batteries	FAR marking of RP write up	
4	More about circuit calculations		
5	The potential divider		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

A level year 2 – CGP

1 Further mechanics

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Circular motion		
2	Centripetal force and acceleration		
3	Simple harmonic motion		
4	Calculations with SHM		

5	The mass-spring system as a simple harmonic oscillator		
RP7	Investigating SHM using a mass-spring system & simple pendulum	FAR marking of RP write up	
6	The simple pendulum and other types of SHO		
7	Free and forced vibrations		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

2 Thermal physics

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Thermal energy transfer		
2	The three gas laws		
RP8	Investigating Boyle's law & Charles's law for a gas	FAR marking of RP write up	
3	The ideal gas equation		
4	Kinetic theory and the pressure of an ideal gas		
5	Kinetic energy of gas molecules		
6	Development of theories		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

3 Gravitational and electric fields

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Gravitational fields		
2	Gravitational field strength		
3	Gravitational potential		
4	Orbits		
5	Electric fields		
6	Electric potential		
7	Comparing electric and gravitational fields		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

4 Capacitors

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Capacitors		
2	Energy stored by capacitors		
3	Dielectrics		
4	Charging and discharging		
RP9	Investigating the charge & discharge of capacitors	FAR marking of RP write up	
5	Time constant and time to halve		

	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

5 Magnetic fields

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Magnetic flux density		
2	Investigating force on a current-carrying wire		
RP10	Investigating force on a current-carrying wire in a magnetic field	FAR marking of RP write up	
3	Forces on charged particles		
4	Electromagnetic induction		
5	Investigating flux linkage		
RP11	Investigating magnetic flux linkage of a coil in a magnetic field	FAR marking of RP write up	
6	Faraday's law and Lenz's law		
7	Alternating current		
8	Transformers		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	

6 Nuclear physics

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Rutherford scattering		
2	Measuring nuclear radius		
3	Nuclear radius & density		
4	Properties of nuclear radiation		
5	Background radiation & intensity		
RP12	Investigating the inverse square law for gamma radiation	FAR marking of RP write up	
6	Exponential law of decay		
7	Half-life & its applications		
8	Nuclear decay		
9	Mass defect & binding energy		
10	Nuclear fission & fusion		
11	Nuclear fission reactors		
		SA/PA of questions	
		FAR marking of exam	

Option B Medical physics

Lesson	Lesson Topic	Assessment	Key Homework tasks
1	Lenses		
2	Calculations with lenses		
3	Physics of the eye		
4	Defects of vision		
5	Physics of the ear		

6	Intensity and loudness		
7	Physics of the heart		
8	Ultrasound		
9	Endoscopy		
10	X-ray production		
11	X-ray imaging		
12	Magnetic resonance imaging		
13	Medical uses of radiation		
14	Comparing imaging techniques		
	Practice questions	SA/PA of questions	
	End of topic exam	FAR marking of exam	