

Lesson	Specification learning outcomes	Edexcel 360 Science Specification match	Edexcel 360 Science GCSE Science Students' Book page reference	Additional information [new content]
Lesson P1.1 The Solar System	1.1, 1.2, 1.3, 1.4	P1b 12.8	P1b.12.6 Observations of the universe [part]	The new specification requires greater coverage of - how ideas about the structure of the Solar System have changed over time - how scientists use waves to find out information about our Universe
Lesson P1.2 Refracting telescopes	1.5, 1.8, 1.10, 1.11			
Lesson P1.3 Lenses practical	1.6, 1.7			
Lesson P1.4 Reflecting telescopes	1.8, 1.9, 1.10			
Lesson P1.5 Waves	1.12, 1.13, 1.14, 1.15, 0.1, 0.2, 0.3	P1b 11.14 P1b 11.15 P1b 11.16	P1b.11.1 Wave basics [part] P1b.11.3 Earthquake waves [part] P1b.11.2 Reflecting waves (The wave equation only)	
Lesson P1.6 Beyond the visible	2.1, 2.2	P1b 11.12	P1b.11.4 The wave equation [part]	The new specification also requires - an understanding of how Herschel and Ritter contributed to the discovery of waves outside the limits of the visible spectrum
Lesson P1.7 The electromagnetic spectrum	2.2, 2.3, 2.4	P1b 11.18 P1b 11.19	P1b.11.4 The wave equation [part]	

Lesson P1.8 Electromagnetic dangers	2.5, 2.6	P1b 11.1 P1b 11.2 P1b 11.3	P1b.11.5 Using electromagnetic waves [part] P1b.11.6 More uses of electromagnetic waves [part] P1b.11.7 Microwaves and mobile phones P1b.11.8 Harmful electromagnetic waves	
Lesson P1.9 Using electromagnetic radiation	2.7	P1b 11.3 P1b 11.6 P1b 11.8	P1b.11.5 Using electromagnetic waves [part] P1b.11.6 More uses of electromagnetic waves [part] P1b.11.7 Microwaves and mobile phones	
Lesson P1.10 Ionising radiation	2.8, 2.9	P2 11.4	P2.11.1 What happened to that? P2.11.2 What are these rays?	
Lesson P1.11 The Universe	3.1, 3.2, 3.3, 3.4	P1b 12.15 P1b 12.16	P1b.12.2 Our place in the universe	
Lesson P1.12 Spectrometers practical	3.8			
Lesson P1.13 Exploring the Universe	3.5, 3.7, 3.9, 3.10	P1b 12.8	P1b.12.6 Observations of the universe [part]	The new specification also requires - why some telescopes are located outside the Earth's atmosphere - the analysis of data provided to support the location of telescopes outside the Earth's atmosphere
Lesson P1.14 Alien life?	3.6	P1b 12.8 P1b 12.17	P1b.12.7 Searching for life	The new specification also requires - the methods used to gather evidence for life beyond Earth, including space probes, soil experiments by landers

Lesson P1.15 Life-cycles of stars	3.11, 3.12, 3.13	P1b 12.12	P1b.12.8 Life of a star	
Lesson P1.16 Theories about the Universe	3.14, 3.15, 3.16	P1b 12.19	P1b.12.9 The universe: past, present and future	
Lesson P1.17 Red-shift	3.17, 3.18, 3.19, 3.20, 3.21, 3.22	P1b 12.19	P1b.12.9 The universe: past, present and future	
Lesson P1.18 Infrasound	1.15, 4.4, 4.5			
Lesson P1.19 Ultrasound	1.15, 4.1, 4.2, 4.3	P1b 11.5	P1b.11.2 Reflecting waves [part] B1b.3.4 Sense organs [part]	
Lesson P1.20 Seismic waves	4.6, 4.9, 4.11	P1b 11.12	P1b.11.3 Earthquake waves	
Lesson P1.21 Earthquakes practical	4.7			
Lesson P1.22 Detecting earthquakes	4.8, 4.10, 4.12, 4.13	P1b 11.13	P1b.11.3 Earthquake waves	The new specification also requires - how data from seismometers can be used to identify the location of an earthquake - an understanding of how, at plate boundaries, plates may slide past each other sometimes causing earthquakes
Lesson P1.23 Renewable resources for energy	5.1, 5.5	P1a 9.8 P1a 9.2 P1a 10.1 P1a 10.2	P1a.9.2 Direct current [part] P1a.9.4 Current, voltage and resistance [part] P1a.10.1 Oil, coal and gas won't last forever	

Lesson P1.24 Non-renewable resources	5.5	P1a 10.1 P1a 10.2	P1a.10.1 Oil, coal and gas won't last forever	
Lesson P1.25 Investigating generators practical	5.7			
Lesson P1.26 Generating electricity	5.6, 5.8, 5.9, 5.10	P1a 9.4 P1a 9.1 P1a 9.2 P1a 9.3	P1a.9.3 Producing electric current P1a.9.1 Telecommunications [explains AC and DC]	The new specifications also requires - the large-scale generation of electrical energy - that generators supply current which alternates in direction
Lesson P1.27 Transmitting electricity	5.11, 5.12, 5.13, 5.14, 5.15			
Lesson P1.28 Paying for electricity	5.2, 5.3, 5.16, 5.17, 5.21, 0.1, 0.2, 0.3	P1a 10.5 P1a 10.6	P1a.10.5 Power P1a.10.7 Electricity, units and money	
Lesson P1.29 Power consumption practical	5.4		P1a.10.7 Electricity, units and money	
Lesson P1.30 Reducing energy use	5.18, 5.19, 5.20	P1a 10.9 P1a 10.10	P1a.10.8 Energy-efficiency and saving money	The new specification also requires - an understanding of the advantages of the use of low energy appliances

Lesson P1.31 Energy transfers	6.1, 6.2, 6.3		P1a.10.6 Efficiency [part]	The new specification also requires - energy transfer chains involving the following forms of energy: thermal (heat), light, electrical, sound, kinetic (movement), chemical, nuclear and potential (elastic and gravitational)
Lesson P1.32 Efficiency	6.4, 6.5	P1a 10.7	P1a.10.6 Efficiency	
Lesson P1.33 Heat radiation practical	6.7			
Lesson P1.34 The Earth's temperature	6.6			

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Lesson P2.1 Static electricity	1.1, 1.2, 1.3, 1.4, 1.5	P2 12.14 P2 12.15 P2 12.16	P2.12.8 How do we get electric shocks? P2.12.9 How does static electricity work?	
Lesson P2.2 Uses and dangers	1.5, 1.6, 1.7, 1.8	P2 12.14 P2 12.15 P2 12.16 P2 12.17	P2.12.8 How do we get electric shocks? P2.12.9 How does static electricity work? P2.12.10 Dangers and uses of electrostatics	
Lesson P2.3 Electric currents	1.9, 1.10, 1.11, 1.12, 1.13	P1a 9.8	P1a.9.1 Telecommunications [part]	The new specification also requires - use the equation: charge (coulomb, C) = current (ampere, A) × time (second, s) $Q = I \times t$
Lesson P2.4 Current and voltage	2.1, 2.2, 2.3, 2.4, 2.5	P1a 9.9	P1a.9.4 Current, voltage and resistance	The new specification also requires greater detail - an understanding that potential difference (voltage) is the energy transferred per unit charge passed and hence that the volt is a joule per coulomb
Lesson P2.5 Investigating resistance practical	2.6			
Lesson P2.6 Changing resistances	2.7, 2.8, 2.9, 2.10, 2.11	P1a 9.10 P1a 9.11 P1a 9.6	P1a.9.4 Current, voltage and resistance P1a.9.5 Resistance, lamps and computers P1a.9.7 Controlling the flow of electricity P1a.9.8 Changing resistance	The new specification also requires - diodes

Lesson P2.7 Transferring energy	2.12, 2.13, 2.14, 2.15, 2.16, 0.1, 0.2, 0.3	P2 10.5 P2 10.4	P1a.10.5 Power P2.10.5 Electrical energy	
Lesson P2.8 Vectors and velocity	3.1, 3.2, 3.3, 3.4, 0.1, 0.2, 0.3	P2 9.1 P2 9.2 P2 9.4	P2.9.1 Speed and velocity	
Lesson P2.9 Acceleration	3.1, 3.5	P2.9.2 P2.9.5	P2.9.2	
Lesson P2.10 Velocity-time graphs	3.5, 3.6, 0.1, 0.2, 0.3	P2 9.2 P2 9.3 P2 9.5	P2.9.2 Acceleration	
Lesson P2.11 Forces	3.7, 3.8	P2 9.11 P2 9.10	P2.9.3 Force and acceleration P2.9.8 Dangerous driving	
Lesson P2.12 Resultant forces	3.9, 3.10, 3.11	P2 9.6 P2 9.7 P2 9.8 P2 9.9 P2 9.10	P2.9.3 Force and acceleration P2.9.4 Mass and acceleration	
Lesson P2.13 Forces and acceleration	3.12, 3.13, 0.1, 0.2, 0.3	P2 9.8 P2 9.9 P1b 12.3 P1b 12.4	P2.9.3 Force and acceleration	

Lesson P2.14 Investigating the relationship between force, mass and acceleration practical	3.15			
Lesson P2.15 Terminal velocity	3.14 3.16, 3.17, 0.1, 0.2, 0.3	P1b 12.1 P2 9.13 P2 9.14	P1b.12.1 A weighty problem P2.9.5 Falling through the air	
Lesson P2.16 Stopping distances	4.1, 4.2	P2 9.15 P2 9.16	P2.9.7 Thinking, braking and stopping	
Lesson P2.17 Friction practical	4.3			
Lesson P2.18 Momentum	4.4, 4.5, 4.6, 0.1, 0.2, 0.3	P2 9.17	P2.9.6 How much motion?	The new specification also requires - the idea of linear momentum conservation
Lesson P2.19 Investigating crumple zones practical	4.8		P2.9.8 Dangerous driving [air bags and crumple zones]	The new specification also requires - an understanding of the idea of rate of change of momentum to explain protective features including bubble wraps and seat belts - use of the equation: force (newton, N) = change in momentum (kilogram metre per second, kg m/s) / time (second, s) $F = (mv - mu) / t$
Lesson P2.20 Momentum and safety	4.7, 4.9, 0.1, 0.2, 0.3	P2 9.18 P2 9.19	P2.9.8 Dangerous driving	

Lesson P2.21 Work and power	4.10, 4.11, 4.12, 4.13, 4.14, 4.18, 0.1, 0.2, 0.3	P2 10.4 P2 10.5 P2 10.2	P2.10.1 Work it out P2.10.2 Power P2.10.3 Kinetic energy	
Lesson P2.22 Potential & kinetic energy	4.15, 4.16, 4.17, 4.18, 0.1, 0.2, 0.3	P2 10.1 P2 10.7	P2.10.4 Potential energy P2.10.9 Roller coasters P2.10.10 The best rides	
Lesson P2.23 Isotopes	5.1	P2 11.5	P2.11.5 Are all hydrogen nuclei the same?	
Lesson P2.24 Ionising radiation	5.2, 5.3, 5.4, 5.5	P2 11.4 P2 11.7	P2.11.2 What are these rays? P2.11.3 Finding underground leaks	
Lesson P2.25 Nuclear reactions	5.6, 5.7, 5.8	P2 12.2 P2 12.4	P2.12.1 Chain reactions P2.12.2 Controlling the chain reaction	
Lesson P2.26 Nuclear power	5.9, 5.10, 5.11	P2 12.6 P2 12.9	P2.12.2 Controlling the chain reaction P2.12.4 Are nuclear power stations safe?	
Lesson P2.27 Fusion - our future?	5.12, 5.13, 5.14, 5.15, 5.16	P2 12.11 P2 12.12 P2 12.13	P2.12.6 How are new theories accepted?	
Lesson P2.28 Changing ideas	6.9, 6.10	P2 11.2	P.2.11.8 How did Marie Curie die?	

Lesson P2.29 Nuclear waste	6.11, 6.12	P2 12.10 P2 12.7	P2.12.4 Are nuclear power stations safe? P2.12.3 Electricity from nuclear power	
Lesson P2.30 Half-life	6.4, 6.5, 6.6, 6.7	P2 11.8 P2 11.9 P2 11.10	P2.11.6 How long will it be radioactive? P2.11.1 What happened to that? [part] P2.11.9 Radioactivity in depth [part]	
Lesson P2.31 Radioactive decay practical	6.8			
Lesson P2.32 Background radiation	6.1, 6.2	P2 11.13 P2 11.14	P2.11.1 What happened to that? P2.11.9 Radioactivity in depth	
Lesson P2.33 Uses of radiation	6.3	P2 11.1 P2 11.3	P2.11.3 Finding underground leaks [gauging thickness] P2.11.4 Uses of X-rays and gamma rays [irradiating food, sterilisation of equipment, diagnosis and treatment of cancer]	
Lesson P2.34 More uses of radiation	6.3	P2 11.1 P2 11.3	P2.11.2 What are these rays? [smoke alarms] P2.11.3 Finding underground leaks [gauging thickness] P2.11.4 Uses of X-rays and gamma rays [irradiating food, sterilisation of equipment, diagnosis and treatment of cancer]	

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Lesson P3.1 Radiation in medicine	1.1, 1.2, 1.3, 1.4, 0.1, 0.2, 0.3	P3 6.1 P3 6.2 P3 6.3 P3 6.4 P1b 11.5	P3.5.7 The production of X-rays [CT scans] P3.6.3 Radiating energy P3.6.7 Endoscopy P1b.11.2 Reflecting waves [ultrasound]	
Lesson P3.2 How eyes work	1.10, 1.11, 1.12	B1b 3.5 B1b 3.6	B1b.3.5 The eye	The eye is new content in P3. The new specification also requires - the average adult human eye has a near point at about 25 cm and a far point at infinity
Lesson P3.3 Sight problems	1.13, 1.14			The new specification also requires - the symptoms and causes of short sight and long sight - compare and contrast treatments for short sight and long sight, including the use of a simple lenses b contact lenses - laser correction
Lesson P3.4 Investigating lenses practical	1.8			
Lesson P3.5 Different lenses	1.5, 1.6, 1.7, 1.9, 0.1, 0.2, 0.3			
Lesson P3.6 Reflection and refraction	1.15, 1.16, 1.17	P3 6.3	P3.6.6 Reflection and refraction	The new specification also requires - calculate critical angle using Snell's Law

Lesson P3.7 Total internal reflection practical	1.18			
Lesson P3.8 Critical angle practical	1.19			
Lesson P3.9 Critical angle	1.15, 1.16	P3 6.3		The new specification also requires - calculate critical angle using Snell's Law
Lesson P3.10 Using reflection and refraction	1.20, 1.21, 1.22	P3 6.3 P3 6.4 P1b 11.5	P3.6.7 Endoscopy P1b.11.2 Reflecting waves [ultrasound]	
Lesson P3.11 X-rays	2.1, 2.2, 2.3, 2.4, 2.5	P3 5.27 P3 5.28 P3 5.29 P3 5.30 P3.5.32 P3 5.33	P3.5.7 The production of X-rays	The new specification also requires - use the equation: kinetic energy (joule, J) = electronic charge (coulomb, C) × accelerating potential difference (volt, V) $KE = \frac{1}{2} mv^2 = e \times V$
Lesson P3.12 Using X-rays	2.6, 2.7, 2.8, 2.9	P3 5.32	P3.5.7 The production of X-rays [part]	The new specification also requires - Inverse Square Law for electromagnetic radiation - also how X-rays are used in CAT scans and fluoroscopes
Lesson P3.13 ECGs and pulse oximetry	2.10, 2.11, 2.12, 2.13, 2.14, 0.1, 0.2, 0.3	P3 6.5 P3 6.10 P3 6.11 P3 6.12 P3 6.13	P3.6.10 Heart electricity P3.6.11 Reading ECGs P3.6.8 Introducing pulse oximetry P3.6.9 Pulse oximetry and oxygen	The new specification also requires - the use of a pacemaker to regulate the heart action

Lesson P3.14: Beta radiation	3.2, 3.3, 3.4, 3.5, 3.6, 3.7	P3 5.9 P3 5.15	P3.5.9 Stable and unstable isotopes [part] P3.5.10 Alpha, beta and gamma decay 1 [part]	
Lesson P3.15: Alpha and gamma radiation	3.2, 3.7, 3.8, 3.19	P3 5.8	P3.5.8 Nuclear radiation	
Lesson P3.16 The stability curve	3.9, 3.10, 3.11, 3.12, 3.13	P3 5.10 P3 5.11 P3 5.12 P3 5.13 P3 5.14 P3 5.15 P3 5.16 P3 5.18	P3.5.9 Stable and unstable isotopes	
Lesson P3.17 Quarks	3.14, 3.15, 3.16, 3.17, 3.18	P3 5.23 P3 5.24 P3 5.25 P3 5.26	P3.5.13 Quarks [part] P3.5.15 Quarks changing flavour! [part]	
Lesson P3.18 Dangers of ionising radiation	3.19, 3.20, 3.21	P3 5.17 P2 11.12 P2 11.15 P3 6.22	P2.11.8 How did Marie Curie die? [part] P3.5.10 Alpha, beta and gamma decay 1 [part] P3.5.11 Alpha, beta and gamma decay 2 [part] P3.6.4 Harmful radiation	

Lesson P3.19 Radiation treatments	3.1, 3.22, 3.23, 3.24, 3.25	P3 6.25 P3 6.21 P3 6.22 P3 6.23 P3 6.24	P3.6.5 Radiotherapy [part] P3.6.12 PET scans [part] P3.6.16 Ethic issues	The new specification also requires - compare and contrast the treatment of tumours using radiation applied internally or externally - explain why isotopes used in PET scanners have to be produced nearby
Lesson P3.20 Collaboration and circular motion	4.1, 4.2, 4.3, 4.4, 4.5, 4.6	P3 5.31 P3 5.32 P2 10.9 P2 10.10 P2 10.11 P3 6.14 P3 5.33	P3.5.13 Quarks P3.5.16 Synchrotrons and CERN [part] P2.10.6 Moving in circles P3.6.13 Bombardment P3.5.14 Fundamental particles [part]	The new specification also requires - the term centripetal force
Lesson P3.21 Collisions practical	4.12			
Lesson P3.22 Collisions	4.7, 4.8, 4.9, 4.10, 4.11	P3 6.17	P3.6.15 Momentum [part]	The new specification also requires: - an understanding that for inelastic collisions momentum is conserved but kinetic energy is not conserved - calculations using conservation of kinetic energy for a two-body elastic collision (in one dimension only)
Lesson P3.23 PET scanners	4.13, 4.14, 4.15, 4.16	P3 6.19 P3 6.20	P3.6.15 Momentum [part] P3.6.14 Annihilation	

Lesson P3.24 Kinetic theory	5.1, 5.2, 5.3, 5.4, 5.5, 5.6	P3 5.1 P3 5.2 P3 5.3 P3 5.4	P3.5.1 Absolute zero	
Lesson P3.25 Investigating temperature and volume for a gas practical	5.7			
Lesson P3.26 Investigating volume and pressure for a gas practical	5.9			
Lesson P3.27 Calculating volumes and pressures	5.8, 5.10, 5.11, 5.12, 0.1, 0.2, 0.3	P3 5.6 P3 5.7	P3.5.2 Pressurising particles P3.5.3 Gas laws	The new specification also requires - apply an understanding of the equation $P_1 V_1 / T_1 = P_2 V_2 / T_2$ to the use of bottled gases in medicine, including the need for a pressure above atmospheric and the calculation of the volume of gas released at atmospheric pressure