Morva

FREE HOME-EDUCATION ROADMAP

# Pearson Edexcel International GCSE Science Double Award

83-week course roadmap

4SD0 | 83 WEEKS | 2 SCIENCE LESSONS / WEEK

## A clear route through Biology, Chemistry and Physics

Complete topics stay together and the level of challenge increases gradually, leaving space for consolidation and exam preparation.

## Designed for home education

A manageable long-term plan rather than a loose collection of topics.

## Built for steady progress

Follow the sequence, adjust the pace, and keep moving towards revision with confidence.

Independent Morva curriculum roadmap. Pearson Edexcel International GCSE Science.

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# At a glance

A quick overview of what is inside this roadmap, who it is for, and how it is organised.

## What this roadmap is

- A structured 83-week guide for teaching Pearson Edexcel International GCSE Science (Double Award).
- A route designed for approximately two science lessons each week.
- A sequence that keeps complete topics together, rather than jumping around unnecessarily.
- A planning tool intended to make long-term home education more manageable.

**83**

**weeks**

**2**

**lessons each week**

**161**

**core lesson pages across the full course**

**3**

**science strands: Biology, Chemistry and Physics**

## Who it is for

- Home-educating families who want a clear long-term plan.
- Parents or tutors teaching the course over two academic years.
- Independent learners who benefit from a structured route.

## What you will have by the end

- A complete week-by-week teaching route.
- Logical progression into the most demanding topics.
- A plan that leaves space for consolidation and revision.

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# How to use this roadmap

Keep it practical: follow the sequence, adjust the pace when needed, and use it as a planning tool rather than a rigid timetable.

### 1 Follow the order

Start at week 1 and teach the topics in sequence so that ideas build naturally.

### 2 Aim for two lessons each week

Use the roadmap as your default rhythm, then slow down or speed up when life or understanding requires it.

### 3 Track progress

Tick off completed weeks and note strengths, misconceptions or topics that need to be revisited.

### 4 Build in review time

Use the structure to finish the course with enough space for catch-up, consolidation and revision.

Helpful mindset: if a topic takes longer than planned, that is normal. The roadmap is there to support good teaching, not to force rushed coverage.

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# Course structure

The 83 weeks are grouped into clear teaching blocks so that each part of the course feels manageable.

| | | |
|---|---|---|
| **Year 9 · Part 1** | **WEEKS 1–14** | Biology foundations |
| **Year 9 · Part 2** | **WEEKS 15–23** | Ecology and waves |
| **Year 9 · Part 3** | **WEEKS 24–31** | Chemistry principles |
| **Year 10 · Part 1** | **WEEKS 32–44** | Forces & motion and inorganic chemistry |
| **Year 10 · Part 2** | **WEEKS 45–57** | Energy, genetics and organic chemistry |
| **Year 10 · Part 3** | **WEEKS 58–68** | Astrophysics, biological resources and gases |
| **Year 11 · First half** | **WEEKS 69–83** | Physical chemistry, electricity, radioactivity and magnetism |

Designed to support confident long-term planning: the route begins with accessible foundations, builds depth steadily, and still leaves time for catch-up or revision before exams.

# Year 9 - Part 1

Weeks 1-14 | Biology foundations

| Week | Topic | Lesson 1 | Lesson 2 |
|---|---|---|---|
| 1 | **Biology - Nature & variety** | B01 Characteristics of living organisms | B02 Plants, animals, fungi and protoctists |
| 2 | **Biology - Nature & variety** | B03 Bacteria, viruses and pathogens | B04 Topic 1 review |
| 3 | **Biology - Structures & functions** | B05 Levels of organisation and cell structure | B06 Biological molecules and food tests |
| 4 | **Biology - Structures & functions** | B07 Enzymes and factors affecting activity | B08 Diffusion, osmosis and active transport |
| 5 | **Biology - Structures & functions** | B09 Photosynthesis and limiting factors | B10 Leaf structure and mineral ions |
| 6 | **Biology - Structures & functions** | B11 Investigating photosynthesis | B12 Balanced diet and energy requirements |
| 7 | **Biology - Structures & functions** | B13 The alimentary canal and peristalsis | B14 Digestive enzymes |
| 8 | **Biology - Structures & functions** | B15 Bile, absorption and villi | B16 Respiration and ATP |
| 9 | **Biology - Structures & functions** | B17 Investigating respiration | B18 The lungs, ventilation and gas exchange |
| 10 | **Biology - Structures & functions** | B19 Smoking and investigating breathing | B20 Transport systems in organisms |
| 11 | **Biology - Structures & functions** | B21 Blood, plasma and red blood cells | B22 The immune response |
| 12 | **Biology - Structures & functions** | B23 The heart and changes in heart rate | B24 Coronary heart disease and blood vessels |
| 13 | **Biology - Structures & functions** | B25 Excretion in plants and humans | B26 Homeostasis and plant responses |
| 14 | **Biology - Structures & functions** | B27 Nervous and hormonal communication | B28 Reflex arcs and the eye |

# Year 9 - Part 2

Weeks 15-23 | ecology and Waves

| Week | Topic | Lesson 1 | Lesson 2 |
|---|---|---|---|
| 15 | **Biology - Structures & functions** | B29 Thermoregulation and hormones | B30 Topic 2 review |
| 16 | **Biology - Ecology & environment** | B40 Populations, communities and sampling | B41 Feeding relationships and energy transfer |
| 17 | **Biology - Ecology & environment** | B42 The carbon cycle | B43 Air pollution, greenhouse gases and climate |
| 18 | **Biology - Ecology & environment** | B44 Water pollution and eutrophication | B45 Topic 4 review |
| 19 | **Physics - Waves** | P18 Transverse and longitudinal waves | P19 Wave speed, frequency and period |
| 20 | **Physics - Waves** | P20 Reflection, refraction and the Doppler effect | P21 The electromagnetic spectrum |
| 21 | **Physics - Waves** | P22 Uses and hazards of electromagnetic radiation | P23 Reflection and refraction ray diagrams |
| 22 | **Physics - Waves** | P24 Refractive index | P25 Total internal reflection and critical angle |
| 23 | **Physics - Waves** | P26 Sound waves | P27 Topic 3 review |

# Year 9 - Part 3

Weeks 24-31 | Chemistry Principles

| Week | Topic | Lesson 1 | Lesson 2 |
|---|---|---|---|
| 24 | **Chemistry - Principles** | C01 States of matter and particle theory | C02 Elements, compounds, mixtures and separation |
| 25 | **Chemistry - Principles** | C03 Paper chromatography and Rf values | C04 Atoms, molecules and isotopes |
| 26 | **Chemistry - Principles** | C05 The Periodic Table and electronic structure | C06 Word equations, formula equations and state symbols |
| 27 | **Chemistry - Principles** | C07 Relative formula mass and the mole | C08 Reacting masses and stoichiometry |
| 28 | **Chemistry - Principles** | C09 Percentage yield and chemical formulae | C10 Determining a formula experimentally |
| 29 | **Chemistry - Principles** | C11 Ions, charges and writing ionic formulae | C12 Ionic bonding and giant ionic lattices |
| 30 | **Chemistry - Principles** | C13 Covalent bonding and dot-and-cross diagrams | C14 Simple molecular and giant covalent structures |
| 31 | **Chemistry - Principles** | C15 Topic 1 review | Consolidation / catch-up |

# Year 10 - Part 1

Weeks 32-44 | Forces & Motion and inorganic chemistry

| Week | Topic | Lesson 1 | Lesson 2 |
|---|---|---|---|
| 32 | **Physics - Forces & motion** | P01 Speed, distance and distance-time graphs | P02 Acceleration and velocity-time graphs |
| 33 | **Physics - Forces & motion** | P03 The motion equation v2 = u2 + 2as | P04 Forces, scalars, vectors and resultants |
| 34 | **Physics - Forces & motion** | P05 Force, mass, acceleration and weight | P06 Stopping distance and road safety |
| 35 | **Physics - Forces & motion** | P07 Falling objects and terminal velocity | P08 Force-extension graphs and elastic behaviour |
| 36 | **Physics - Forces & motion** | P09 Topic 1 review | Consolidation / catch-up |
| 37 | **Chemistry - Inorganic** | C16 Group 1: alkali metals | C17 Group 7: halogens and displacement |
| 38 | **Chemistry - Inorganic** | C18 The atmosphere and percentage oxygen | C19 Combustion, carbonates and carbon dioxide |
| 39 | **Chemistry - Inorganic** | C20 The reactivity series | C21 Rusting and corrosion prevention |
| 40 | **Chemistry - Inorganic** | C22 Oxidation, reduction and redox | C23 Metals with dilute acids: practical skills |
| 41 | **Chemistry - Inorganic** | C24 Indicators, pH and neutralisation | C25 Solubility rules and proton transfer |
| 42 | **Chemistry - Inorganic** | C26 Acids with metals, bases and carbonates | C27 Preparing soluble salts and copper sulfate crystals |
| 43 | **Chemistry - Inorganic** | C28 Tests for gases | C29 Flame tests and cation tests |
| 44 | **Chemistry - Inorganic** | C30 Anion tests and tests for water | C31 Topic 2 review |

# Year 10 - Part 2

Weeks 45-57 | energy, genetics and organic chemistry

| Week | Topic | Lesson 1 | Lesson 2 |
|---|---|---|---|
| 45 | **Physics - Energy transfers** | P28 Energy stores, transfers and conservation | P29 Efficiency and Sankey diagrams |
| 46 | **Physics - Energy transfers** | P30 Conduction, convection and radiation | P31 Investigating thermal energy transfer and insulation |
| 47 | **Physics - Energy transfers** | P32 Work done and gravitational potential energy | P33 Kinetic energy and conservation |
| 48 | **Physics - Energy transfers** | P34 Power | P35 Topic 4 review |
| 49 | **Biology - Reproduction & inheritance** | B31 Sexual and asexual reproduction | B32 Flowers, pollination and fertilisation |
| 50 | **Biology - Reproduction & inheritance** | B33 Germination and asexual reproduction in plants | B34 Human reproduction and reproductive hormones |
| 51 | **Biology - Reproduction & inheritance** | B35 DNA, genes, chromosomes and alleles | B36 Genetic diagrams, pedigrees and sex determination |
| 52 | **Biology - Reproduction & inheritance** | B37 Mitosis, meiosis and chromosome number | B38 Variation, mutation, natural selection and antibiotic resistance |
| 53 | **Biology - Reproduction & inheritance** | B39 Topic 3 review | Consolidation / catch-up |
| 54 | **Chemistry - Organic** | C40 Organic chemistry language and formulae | C41 Crude oil and fractional distillation |
| 55 | **Chemistry - Organic** | C42 Fuels, combustion and air pollution | C43 Cracking hydrocarbons |
| 56 | **Chemistry - Organic** | C44 Alkanes and substitution | C45 Alkenes, bromine water and addition |
| 57 | **Chemistry - Organic** | C46 Addition polymers | C47 Chemistry full-course review |

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# Year 10 - Part 3

Weeks 58-68 | astrophysics, biological resources and gases

| Week | Topic | Lesson 1 | Lesson 2 |
|---|---|---|---|
| 58 | **Physics - Astrophysics** | P57 The universe, galaxies and the Solar System | P58 Gravity and orbits |
| 59 | **Physics - Astrophysics** | P59 Star colour and temperature | P60 Evolution of Sun-like stars |
| 60 | **Physics - Astrophysics** | P61 Evolution of massive stars | P62 Physics full-course review |
| 61 | **Biology - Biological resources** | B46 Increasing crop yield | B47 Yeast in food production and anaerobic respiration |
| 62 | **Biology - Biological resources** | B48 Yoghurt and industrial fermenters | B49 Selective breeding |
| 63 | **Biology - Biological resources** | B50 Genetic modification | B51 Topic 5 review |
| 64 | **Biology - Biological resources** | B52 Biology full-course review | Consolidation / catch-up |
| 65 | **Physics - Solids, liquids & gases** | P36 Density | P37 Investigating density and pressure on surfaces |
| 66 | **Physics - Solids, liquids & gases** | P38 Pressure in fluids | P39 Gas pressure and molecular motion |
| 67 | **Physics - Solids, liquids & gases** | P40 Absolute zero and the Kelvin scale | P41 Gas laws |
| 68 | **Physics - Solids, liquids & gases** | P42 Topic 5 review | Consolidation / catch-up |

# Year 11 - First half

Weeks 69-83 | physical chemistry, electricity, radioactivity and magnetism

| Week | Topic | Lesson 1 | Lesson 2 |
|---|---|---|---|
| 69 | Chemistry - Physical | C32 Exothermic and endothermic reactions | C33 Calorimetry: Q = mcΔT and molar enthalpy |
| 70 | Chemistry - Physical | C34 Investigating temperature changes | C35 Factors affecting reaction rate |
| 71 | Chemistry - Physical | C36 Collision theory, activation energy and catalysts | C37 Rates practicals |
| 72 | Chemistry - Physical | C38 Reversible reactions | C39 Topic 3 review |
| 73 | Physics - Electricity | P10 Mains electricity, a.c./d.c. and electrical safety | P11 Electrical power, energy and fuse selection |
| 74 | Physics - Electricity | P12 Series and parallel circuits | P13 Current-voltage characteristics |
| 75 | Physics - Electricity | P14 Resistance, LDRs and thermistors | P15 Charge, current and electron flow |
| 76 | Physics - Electricity | P16 Voltage as energy per charge | P17 Topic 2 review |
| 77 | Physics - Radioactivity | P49 Atomic nuclei and isotopes | P50 Alpha, beta and gamma radiation |
| 78 | Physics - Radioactivity | P51 Nuclear equations, detection and background radiation | P52 Activity and half-life |
| 79 | Physics - Radioactivity | P53 Uses, contamination, irradiation and radiation safety | P54 Nuclear fission and reactors |
| 80 | Physics - Radioactivity | P55 Nuclear fusion and stars | P56 Topic 7 review |
| 81 | Physics - Magnetism | P43 Magnets, magnetic materials and fields | P44 Investigating magnetic fields |
| 82 | Physics - Magnetism | P45 Magnetic field around a current | P46 The motor effect and left-hand rule |
| 83 | Physics - Magnetism | P47 Electromagnetic induction and generators | P48 Topic 6 review |