Curriculum Map: KS3 & KS4 Science Biology Content

THE KING'S ACADEMY
Emmanuel Schools Foundation

Science education provides the foundations for understanding the world; teaching essential aspects of the methods, knowledge, and uses of science. Studying biology topics is necessary for understanding living organisms, ecosystems and genetics, which are fundamental in areas such as health, environmental conservation, and biotechnology.

Academy Exam
Other assessment
Unit Link
Core / required practical

Year 7

- B1. Cells
- How do we use microscopes why are they useful?
- What are the basic structures found in animal and plant cells?
- How do important chemicals enter cells?
- What is the function of the skeleton?
- How do muscles help us move?

Activities Week

Year 8

- B2. Skeletal & Muscular Systems
- B3. Nutrition & Digestion
- What is a balanced diet and how do we digest food?
- B4. Gas Exchange Systems
- What is the respiratory system and how do the lungs work?
- How do exercise, smoking, and asthma affect breathing?
- How do mammals reproduce?
- How do plants reproduce and how are seeds dispersed?
- What do plants need to grow?
- B6. Photosynthesis

Activities Week; Ecology Trip

Year 9

- B5. Reproduction
- 1. Cells
- B9. Inheritance
- How do cells differentiate, divide, and transport materials in and out?
- How do cell structures enable specific functions?
- What is competition and natural selection?
- How are characteristics inherited?
- What is the concept of interdependence?
- What are aerobic and anaerobic respiration?
- B7. Respiration

Activities Week; Yorkshire Wildlife Park Trip

Year 10

- 2. Organisation
- 4. Bioenergetics
- B8. Ecosystems
- How do digestive enzymes and the circulatory system work?
- How are plant tissues organised?
- How do pathogens cause disease, and what are our natural and medical defences?
- How does photosynthesis allow plants to harness the sun's energy?
- How does respiration transfer energy?
- Why is biodiversity important to ecosystems?
- 7. Ecology

Start GCSE Content

Work Experience

Year 11

- 3. Infection & Response
- 5. Homeostasis & Response
- How do cells communicate with each other?
- How does inheritance work, and why can disorders arise?
- How are DNA, genes, and chromosomes organised?
- What is the purpose of meiosis and mitosis?
- What is the mechanism and evidence of evolution by natural selection?
- 6. Inheritance, Variation, Evolution

Exams

KS3 B1 · *KS3 B5* · *KS3 B3 & B4* · *KS3 B4 & B7* · *KS3 B8* · *KS3 B9* · *GCSE Unit 2 & 4* · *GCSE Unit 5* · *GCSE Unit 6* · *GCSE Unit 7* · *GCSE Unit 4* · *GCSE Unit 1*

Curriculum Map: KS3 & KS4 Science Chemistry Content

THE KING'S ACADEMY
Emmanuel Schools Foundation

Science education provides the foundations for understanding the world; teaching essential aspects of the methods, knowledge, and uses of science. Studying chemistry topics is necessary for understanding chemical reactions, materials, and substances, which are fundamental in areas such as pharmaceuticals and many industrial processes.

Academy Exam
Other assessment
Unit Link
Core / required practical

Exams

How can humans use the Earth's resources responsibility?

What issues do common atmospheric pollutants cause?

KS3 C8
9. Atmosphere
What is the composition of the Earth's atmosphere and how has it changed?

How can we identify specific chemicals?

10. Using Resources
KS3 C4 & C7
KS3 C7
4. Chemical Changes
3. Quantitative Chemistry

8. Analysis
7. Organic
Why is carbon-based chemistry so important?

6. Rates of Reaction

Year 11

How are calculations used in chemistry?
How are chemical reactions used to extract metals?
Why are some reactions exothermic and others endothermic?
What is collision theory and how can the rate of a reaction be increased?
How can you change the position of a dynamic equilibrium?

How do structure and bonding relate to physical and chemical properties?
2. Bonding & Structure
5. Energy Changes
KS3 C5
Work Experience

Start GCSE Content
GCSE Unit 9
C8. Earth & Atmosphere
GCSE Unit 7 & 10
C7. Materials

Year 10

How is the periodic table organised, and why?
How are atoms structured, and how has evidence changed the atomic model over time?
What is the composition of the Earth and atmosphere?
How are metals extracted?
How can you work out the reactivity of metals?

Activities Week; Yorkshire Wildlife Park Trip
1. Atomic Structure & Periodic Table
KS3 C2 & C6
GCSE Unit 2
C6. Periodic Table
How is the periodic table organised?
GCSE Unit 5
C5. Energy Changes

Year 9

What is the conservation of mass?
What are the common types of chemical reaction?
What are acids and alkalis and how do they react?
What do heating curves represent?
What are endothermic and exothermic reactions?

What are the signs of a chemical reaction?
C4. Chemical Reactions
GCSE Unit 1 & Physics
C2. Atoms, Elements, Compounds
GCSE Unit 4
Activities Week; Ecology Trip

Year 8

How do we separate various mixtures?
What do we mean by 'pure' in chemistry?
How are atoms structured?
What are the states of matter and their properties?
What is the particle model?

Activities Week
C3. Pure & Impure Substances
GCSE Unit 2 & Physics
KS3 P10
C1. Particle Model

Year 7

Curriculum Map: KS3 & KS4 Science Physics Content

THE KING'S ACADEMY
Emmanuel Schools Foundation

Science education provides the foundations for understanding the world; teaching essential aspects of the methods, knowledge, and uses of science. Studying physics topics is necessary for understanding the principles of matter, energy, and forces, which are fundamental in areas such as engineering, technological innovation, and space exploration.

Academy Exam
Other assessment
Unit Link
Core / required practical

Year 7

- **P1. Energy** — What are fuels and why do we burn them? How is energy stored and transferred?
- **P2. Speed** — How do we measure and calculate speed? How do distance-time graphs show the journey of an object?
- **P3. Forces** — What are the main forces and what happens if forces are balanced?
- **P4. Pressure in Fluids** — What are fluids and what is pressure?
- **P5. Sound** — What are waves and how are they represented? How do sound waves travel and how do our ears work?
- **P6. Light** — What is reflection and refraction? Why do objects appear a certain colour?
- **P7. Electricity in Circuits** — What are conductors and insulators? What is the difference between series and parallel?
- **P8. Static Electricity** — What is static electricity?
- **P9. Magnets** — How do magnets use fields to interact?
- **P10. Particle Model** — What are the features of our solar system and why can weight vary? How does the particle model predict the behaviour of solids, liquids, and gases?
- **P11. Space**

Year 8

- **1. Energy** — What is energy and how is it stored and transferred?
- **2. Electricity** — How are electrical circuits represented and how do they function? How are charge, current, resistance, and potential difference linked?
- **3. Particle Model** — What is the difference between speed and velocity?
- **4. Atomic Structure** — What are the properties of radiation and what are the uses / dangers? What are the common contact and non-contact forces?
- **5. Forces** — What are Newton's laws?
- **6. Waves** — What are the properties of transverse and longitudinal waves? What are the uses of electromagnetic waves? How are current in wire and magnetic fields linked? How does Fleming's lefthand rule help explain how motors work?
- **7. Magnetism**

Year 9

- Activities Week; Yorkshire Wildlife Park Trip
- Work Experience
- Activities Week; Ecology Trip
- Activities Week

Year 10

- Start GCSE Content

Year 11

- Exams

KS3 P7 · KS3 P9 · KS3 P3 · KS3 C2 · KS3 C1 · KS3 P10 & C1 · GCSE Unit 6 · GCSE Unit 5 · GCSE Unit 1 · GCSE Unit 2 · GCSE Unit 7 · GCSE Unit 3 & Chemistry