Subject: Biology **Key Stage 4 Subject Timeline Year 9 to 11** **Exam Board: AQA**

	KS4 Biology - Year 9					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Topics	Cell Biology *Cells* *Microscope* *Cell division and differentiation* *Stem Cells*	Cell Biology *Differentiated Cells* *Growing Microorganisms* *Antibiotics (move to Health matters)*	Moving and Changing Materials (Transport) *Exchange Surfaces* *Plants and minerals* *Circulatory System* *Blood and CHD*	Moving and Changing Materials (Transport) *Osmosis* *Diffusion* *Active Transport* *Enzymes* *Digestion*	Photosynthesis *Photosynthesis* *Leaf structure* *Transpiration and Translocation* *Limiting Factors before Prac*	Health Matters *Pathogens* *White blood cells* *Monoclonal Antibodies* *Growing Microorganisms* *Antibiotics (Triple)*
Key skills and Concepts	Required practical – Using a light microscope to observe and record animal and plant cells Key Concept – Cell development Required Practical –Investigating disinfectants Maths Skill – Size and number		Key Concept – Investigating the need for transport systems Heart Dissection	Required Practical – Osmosis using salt or sugar solutions and plant tissue Key Concept – Investigating the need for transport systems Required Practical – Use of qualitative reagents to test for a range of carbohydrates, lipids and proteins Maths Skill – Extracting and Interpreting Information Required Practical – Effect of light intensity on photosynthesis Key Concept – Diffusion in living systems Maths skill – Surface area to volume ratio		Growing Microorganisms
Threshold Concepts	Fundamental concept – cells are the building blocks of animals and plants – additionally biochemical and genetic processes occur in cells. The structure of them is required to understand these processes well.		Movement of materials through a plant and how green plants obtain their energy is the basis for energy flow through living things	Builds on the previous topic. The movement of water and the importance of it in transporting other materials through plants and animals. Develops from simple structures to more developed structures		
Endpoints	*To understand different cell structures and their function* To describe how complex organisms can develop from a fertilised egg cell	*To explain how organisms obtain energy from their food* To describe the importance of microorganisms and how they can be cultivated in a laboratory	*To describe how adaptations of plants help them survive* Describe the factors that affect photosynthesis *Describe how diffusion allows substances to pass in and out of cells* *Describe how plants deal with changing water availability*	*To describe different methods of movement of materials* To explain how enzymes work	*To understand the need for organ systems* To consider different methods utilised to move materials	
Assessments	Midpoint Assessment – Chapter 1	End of Topic Assessment – Chapter 1	Midpoint Assessment – Chapter 2	End of Topic Assessment – Chapter 2	Midpoint Assessment – Chapter 3	**Year 9 PPE Exams**

Subject: Biology

Key Stage 4 Subject Timeline Year 9 to 11

Exam Board: AQA

KS4 Biology - Year 10

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topics	Health Matters *Non-communicable diseases* *Plant Diseases* ***Check students have covered Communicable disease in Yr. 9***	Coordination and Control *Homeostasis* *Nervous system* *The eye* *Controlling body temperature* *Controlling blood glucose*	Coordination and Control *Human Reproduction* *IVF* *Contraception* *Auxins*	Genetics *DNA and genes* *Tracing human migration* *Meiosis* *Asexual and Sexual Reproduction*	Genetics *Genetic Crosses* *Tracing gene disorders* *Gregor Mendel*	Variation and Evolution *Variation* *Natural Selection* *Antibiotic resistance* *Selective Breeding*
Key skills and Concepts	Key Concept – Looking at risk factors Maths Skill – Sampling and scientific data	Required Practical – Investigating reaction time Required Practical – The effect of light on the growth of germinating seedlings Maths skill – The spread of scientific data			Key Concept – Understanding that genetics is not always as simple as it appears Maths Skill – Fractions, ratio, proportion and probability	
Threshold Concepts	Introduction to how organisms relate to each other and how the humans and plants deal with infection and disease. Recaps and builds on the first topic of cells in Year 9	This topic builds on how an organism deals with changing conditions. Knowledge of cells, chemical reactions, enzymes and movement of substances from previous topics are all required			Difficult concepts some of this topic is standalone. To understand the molecular genetics a good understanding of cells is required.	
Endpoints	*To describe factors that affect the chance of catching a non-communicable disease* To describe how communicable diseases are spread *To explain how diseases are controlled* To explain how plants are protected from disease	*To understand how conditions and processes in the body are coordinated and controlled* To describe the control of metabolism and levels of chemicals in the body	*To describe the control of sexual development and human reproduction* To understand how plants respond to stimuli to control important processes		*To describe our understanding of DNA and the way genes work* To describe how sex cells are produced for use in reproduction	*To describe and explain how characteristics are inherited from one generation to the next*
Assessments	Midpoint Assessment – Chapter 4 End of Chapter 4 Test	Midpoint Assessment – Chapter 5	End of Topic Test – Chapter 5	**Year 10 PPE Exams**	Midpoint Assessment - Chapter 6 End of Topic Test – Chapter 6	Midpoint assessment– Chapter 7

Subject: Biology **Key Stage 4 Subject Timeline Year 9 to 11** **Exam Board: AQA**

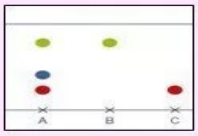
	KS4 Biology - Year 11					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Topics	Variation and Evolution *Genetic Engineering* *GMO's* *Cloning* *Extinction or Survival*	Ecology in Action *Abiotic Factors* *Predator Prey* *Adaptation* *Cycling Materials* *Sampling Practical* *Decay*	Ecology in Action *Global Warming* *Pollution* *Biodiversity* *Human Impact*	Catch-up/Revision	Revision	Exams
Key skills and Concepts	Key Concept – Evolution: understanding how the evidence supports the theory Maths Skill – Using charts and graphs to display data		Key Concept – Learning about different ecosystems Required Practical – Measure the size of a population of a common species in a habitat Required Practical – Investigate the effect of temperature on the rate of decay of fresh milk (Triple Only) Key Concept – To understand the impact on the environment of human activity Maths Skill – Using graphs to show relationships			
Threshold Concepts	The concepts from this topic build on the knowledge gained at the end of Year 10 when studying genes.		Links with the Chemistry Sustainable Development topic being taught at the same time. Adaptations builds on the variation and evolution from Year previous topic			
Endpoints	*To describe the causes of variation and its effects on the individual* To explain how variation, struggle of the fittest and natural selection lead to evolution	*To consider the causes of extinction*	*To describe the factors that affect living organisms in a habitat* To explain how plants and animals within a community interact	*To explain how humans affect biodiversity* To describe how materials in a community are cycled		
Assessments	Endo of Topic test–Chapter 7	End of Topic Test – Chapter 8 **Year 11 PPE Exams**	**Year 11 PPE Exams**	**External GCSE Exams**	**External GCSE Exams**	**External GCSE Exams**

CHEMISTRY

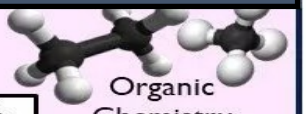
The Study of Matter



Revision & Exam Prep.



Earth's Resources



Chemical Analysis

Organic Chemistry

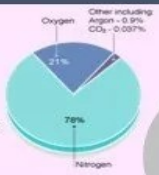
Revision & Exam Prep. — Spring 2 — Spring 1 — Autumn 2 — Autumn 1

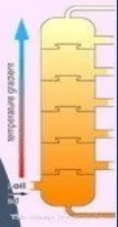


Required Practical Recap



Earth's Atmosphere

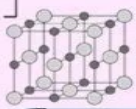






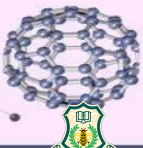


Structure & Bonding



Properties & Bonding







Electrolysis

YEAR 11

Autumn 2 — Spring 1 — Spring 2 — Summer 1 — Summer 2 — Autumn 1

Lord's Independent School

Equilibrium

$A + B \rightleftharpoons C + D$

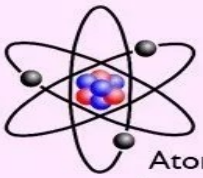


Quantitative Chemistry



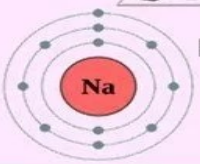


Rate of Reaction

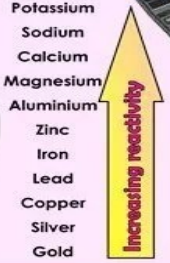


Atomic Structure

Electronic Structures, Ions & Isotopes



Reactivity



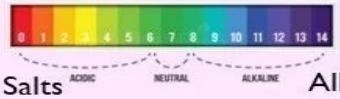
YEAR 10

AQA

Summer 1 — Spring 2 — Spring 1 — Autumn 2 — Autumn 1 — Summer 2



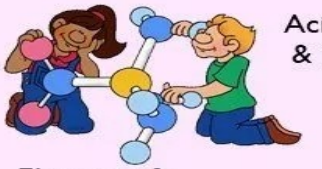
Energy Changes



Acids, Bases, Salts & Neutralisation



Alkali Metals & Halogens



Elements & Compounds

The Periodic Table

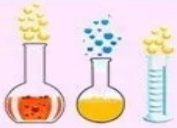




Chemical Energy

YEAR 9

Autumn 2 — Spring 1 — Spring 2 — Summer 1 — Summer 2 — Autumn 1



Types of Reactions



Earth's Climate

Earth's Resources



Acids & Alkalis



Separating Mixtures

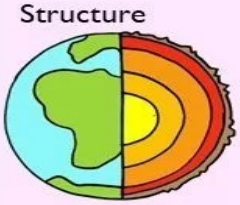


YEAR 8

Summer 1 — Spring 2 — Spring 1 — Autumn 2 — Autumn 1 — Summer 2

YEAR 7

Earth's Structure

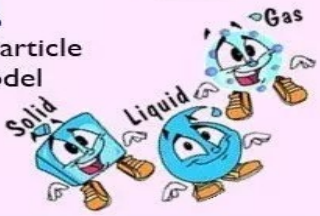




Metals & Non-Metals



The Particle Model



BIOLOGY

the study of living organisms

Lords Independent School

Revision & Exam Prep. | Biodiversity | Organisation in Ecosystems | Genetics & Evolution | Variation & Evolution | Reproduction



YEAR 11

Revision & Exam Prep. | Spring 2 | Spring 1 | Autumn 2 | Autumn 1 | Summer 2



Required Practical Recap



Adaptations

Communicable Diseases



Hormonal Control



Cancer

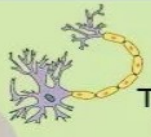


Organisation | Non-communicable Diseases

Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Autumn 1 | Summer 2

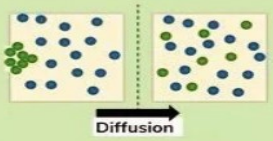
YEAR 10

AQA



The Human Nervous System





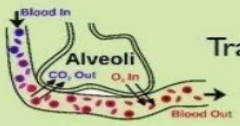
Diffusion



Mitosis



Organisation



Cell Transport 1

Cell Division



Cell Structure

Autumn 1 | Summer 2 | Summer 1 | Spring 2 | Spring 1 | Autumn 2

Cell Transport 2

Respiration

$6CO_2$ Carbon dioxide + $6H_2O$ Water $\xrightarrow{\text{Light}}$ $C_6H_{12}O_6$ Sugar + $6O_2$ Oxygen

Photosynthesis

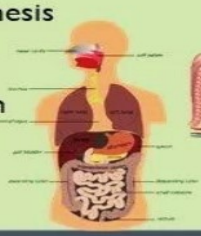


Enzymes RP

Enzymes & Digestion

YEAR 9

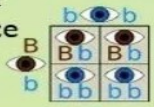
$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + ATP$ (glucose, oxygen, carbon dioxide, water, energy)



Digestion



Cellular Respiration



Genes & Inheritance

Autumn 1 | Summer 2 | Autumn 2 | Spring 1 | Spring 2 | Summer 1

Respiration



Genes & Evolution





Movement

Photosynthesis



YEAR 8

Autumn 1 | Summer 2 | Summer 1 | Spring 2 | Spring 1 | Autumn 2 | Autumn 1

YEAR 7



Plant Reproduction





Sampling Daisy Plants

Plants

Food Web



Human Reproduction





Cells





Animal Cell



Plant Cell

PHYSICS

The scientific study of matter, energy, space, and time

MY GCSE SCIENCE

YEAR 11

Revision & Exam Prep. | Spring 2 | Spring 1 | Autumn 2 | Autumn 1 | Summer 2

- Revision & Exam Prep.
- Required Practical Recap
- Electromagnetism
- Waves
- Forces- Stopping and momentum
- Newtons' Laws of Motion
- Velocity, Displacement, Acceleration
- Resultant Force
- Atomic Structure- Model of the atom
- Mains electricity

YEAR 10

Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 | Autumn 1

- Atomic Structure- Radioactivity
- Particle theory and energy in matter
- Energy Stores and transfers
- Circuit electricity
- $P=E/t$
- $P=I^2R$
- $P=IV$
- $V=IR$

YEAR 9

Summer 1 | Spring 2 | Spring 1 | Autumn 2 | Autumn 1 | Summer 2

- Forces 2
- Friction
- Waves-Sound
- Energy 2
- Electromagnetism

YEAR 8

Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 | Autumn 1

- Waves-Light
- Electricity 1
- Forces 1- balanced/ unbalanced forces
- The Earth in Space

YEAR 7

Summer 1 | Spring 2 | Spring 1 | Autumn 2 | Autumn 1

- Distance = Speed x Time
- Time = Distance / Speed
- Speed = Distance / Time
- Forces 1- Speed
- Energy 1