

Intent:

We follow the AQA A-level Biology specification, which follows on from GCSE science. Students build on knowledge gained in GCSE and build upon this using latest research and experimental techniques to gain a great understanding of biological principles.

Students complete compulsory investigations across the two-year course (6 in Y12 and 6 in Y13), adding to a lab workbook as they progress. The skills learned from the practical element of the course increase social mobility by setting the students up very well for a university laboratory for any future aspirations they may have in that field. We also complete field investigations at different locations to enable students to collect data from a range of places.

Students are supported and encouraged to develop their revision and independent learning skills to enable them to critically analyse data and conclusions. We support students to use their learned knowledge from the course and apply this to many different examples in many different settings. Knowledge includes that of the human body, ecology, medicine and plant life and cycles. Students are given regular formative assessments to monitor progress with skills and topics and allow for early intervention where necessary.

Year 12	Half-Term 1	Half-Term 2	Half-Term 3	Half-Term 4	Half-Term 5
Topic(s)	Biological Molecules - Monomers and polymers - Carbohydrates - Lipids - Proteins - Enzymes	Biological Molecules - Nucleic acids (DNA and RNA) - DNA replication - ATP - Water - Inorganic ions	Cells - Cell structure - Methods of studying cells - Cell division - Transport across cell membranes - Cell recognition and immunity	Organisms exchange substances with their environment - Surface area to volume ratio - Gas exchange - Digestion and absorption - Mass transport in animals - Mass transport in plants	Genetic information and variation - DNA, genes and chromosomes - DNA and protein synthesis - Mutation and meiosis - Genetic diversity and adaptation - Species and taxonomy - Biodiversity within a community - Investigating diversity
Links to Prior Learning	Biological Molecules Year 10 – Cells Year 10 – Organisation	Biological Molecules Year 10 – Cells Year 11 – Inheritance	Cells Year 10 – Cells Year 10 – Transport in cells	Organisms exchange substances with their environment Year 10 – Cells Year 10 – Transport in cells Year 10 – Organisation	Genetic information and variation Year 10 – Cells Year 11 – Inheritance Year 11 – Ecology
Key Practical Activities	Required practical 1: Enzyme controlled reactions		Required practical 2: preparing cells for analysis Required practical 3: water potential of plant tissue using a calibration curve Required practical 4: permeability of cell membranes	Required practical 5: dissection of plant or animal mass transport system	Required practical 6: Growing bacteria using aseptic techniques
Assessment	- Formative assessments will regularly take place by staff within lessons, as well as weekly work reviews carried out based on past exam questions. - Synoptic, summative assessments to take place at four points throughout the year (IAPs). - Mock examinations to take place in January and July.				

Year 13	Half-Term 1	Half-Term 2	Half-Term 3	Half-Term 4	Half-Term 5	Half-Term 6
Topic(s)	Energy transfers within and between organisms - Photosynthesis - Respiration	Energy transfers within and between organisms - Respiration - Energy and ecosystems - Nutrient cycles	Organisms respond to changes in their internal and external environment - Stimuli are detected and lead to a response - Receptors - Control of heart rate - Nervous coordination	Organisms respond to changes in their internal and external environments - Synaptic transmission - Skeletal muscles - Homeostasis Genetics, populations, evolution and ecosystems - Inheritance	Genetics, populations, evolution and ecosystems - Populations - Evolution may lead to speciation - Populations in an ecosystem The control of gene expression - Altering the sequence of bases - Gene expression is controlled by a number of features - Regulation of transcription and translation - Gene expression and cancer	The control of gene expression - Using genome projects - Recombinant DNA technology - Diagnosis - Genetic fingerprinting Essay preparation
Links to Prior Learning	Energy transfers within and between organisms Year 10 – Bioenergetics Year 12 – Cells	Energy transfers within and between organisms Year 10 – Bioenergetics Year 12 – Cells	Organisms respond to changes in their internal and external environment Year 11 – Homeostasis Year 12 – Mass transport (heart)	Organisms respond to changes in their internal and external environment Year 11 – Homeostasis Year 12 – Mass transport Genetics, populations, evolution and ecosystems Year 11 – Inheritance Year 12 – DNA	Genetics, populations, evolution and ecosystems Year 11 – Inheritance Year 11 – Ecology Year 12 – DNA The control of gene expression Year 11 – Inheritance	The control of gene expression Year 11 – Inheritance Year 12 – Cells

Key Practical Activities	Required practical 7: Chromatography to investigate plant pigments Required practical 8: Rate of dehydrogenase activity in extracts of chloroplasts	Required practical 9: Rate of respiration in single celled organisms	Required practical 10: effect of environmental variable on the movement of an animal	Required practical 11: Identify the concentration of glucose in an unknown urine sample	Required practical 12: Investigating the distribution of a given species	
Assessment	- Formative assessments will regularly take place by staff within lessons, as well as weekly work reviews carried out based on past exam questions. - Synoptic, summative assessments to take place at three points throughout the year (IAPs). - Mock examinations to take place in July (end of Y12), December and March					