	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
Year 13 Biology	**Content delivered:** **Unit 4.2:** Biodiversity Sampling techniques Measuring species richness Simpsons Index of Diversity Genetic biodiversity Maintaining biodiversity *In-situ* and *ex-situ* methods **Unit 5.2:** Chloroplast structure Photosynthetic pigments Light dependent reaction Light independent reaction Factors affecting photosynthesis Cellular respiration Mitochondrion structure Glycolysis, link reaction and Krebs cycle Chemiosmotic theory	**Content delivered:** **Unit 4.2:** Biological classification Binomial system 3 domains of life Classification and phylogeny Evolution by natural selection Types of variation Statistics and variation Adaptation **Unit 5.2:** Respiratory substrates RQ **Unit 4.1:** Phagocytes B and T lymphocytes Pathogens Opsonins, agglutins and anti-toxins Active & passive immunity Vaccination	**Content delivered:** **Unit 6.1.1:** Gene mutations and their effects Regulating gene expression Genetic control of body plans Mitosis and apoptosis **Unit 6.2.1:** Cloning plants Micropropagation Cloning animals SCNT Arguments for and against artificial cloning Using microorganisms in biotechnological processes Using microorganisms in human food production Aseptic techniques Growth curves	**Content delivered:** **Unit 6.1.2:** Environment and genetic factors in phenotypic variation Sexual reproduction leading to variation Linkage and epistasis Monohybrid and dihybrid crosses Genetic bottlenecks Continuous and discontinuous variation Factors affecting evolution Allele frequencies Artificial selection **Unit 6.3.1:** Biotic and abiotic factors in ecosystems Biomass transfers Nitrogen cycle Carbon cycle Succession **Unit 6.3.2:** Factors affecting population size Interactions between populations Conservation and preservation Managing ecosystems Managing environmental resources	**Content delivered:** **Unit 6.1.3:** DNA sequencing Gene sequencing DNA profiling PCR Electrophoresis Genetic engineering Genetic manipulation Gene therapy	**Summer exams**
Key Words **Level 2** **Level 3**	**4.2:** Biodiversity, habitat, species, allele, locus, polymorphic gene locus, monoculture, keystone species, conservation *in situ*, conservation *ex situ* **5.2:** Granum, photosystem, stroma, thylakoid, electron carrier, photophosphorylation, independent variable, dependent variable, control variable, validity, reliability, reproducibility, glycolysis, cristae, mitochondrial matrix, decarboxylation, dehydrogenation, substrate-level phosphorylation, chemiosmosis, oxidative phosphorylation, respiratory substrate, respirometer	**4.2:** Binomial system, classification, phylogeny, natural selection, continuous variation, discontinuous variation, interspecific, intraspecific, correlation coefficient, anatomical, behavioural, physiological, adaptation **5.2:** Glycolysis, cristae, mitochondrial matrix, decarboxylation, dehydrogenation, substrate-level phosphorylation, chemiosmosis, oxidative phosphorylation, respiratory substrate, respirometer **4.1:** Pathogen, transmission, vector, callose, inflammation, mucous membrane, primary defences, antibodies, clonal expansion, interleukins, regulator cells, agglutinins, opsonins, epidemic, immunity, vaccination, antibiotic	**6.1.1:** Point mutation, silent mutation, missense, nonsense, indel, frameshift, exon, intron, operon, transcription factor, apoptosis, conserved, homeobox sequence, *Hox* gene **6.2.1:** Pathogen, transmission, vector, callose, inflammation, mucous membrane, primary defences, antibodies, clonal expansion, interleukins, regulator cells, agglutinins, opsonins, epidemic, immunity, vaccination, antibiotic	**6.1.2:** Genotype, phenotype, allele, heterozygous, homozygous, monogenic, dihybrid, codominance, autosomal linkage, epistasis, chi-squared, continuous variation, discontinuous variation, directional selection, founder effect, genetic bottleneck, stabilising selection, allopatric speciation, sympatric speciation **6.3.1:** Abiotic, biotic, ecosystem, biomass transfer, trophic level, productivity, saprotroph, ammonification, nitrification, denitrification, decomposition, absorption, chemo autotrophic, climax community, deflected succession, pioneer species, quadrat, transect **6.3.2:** Carrying capacity, limiting factor, interspecific competition, intraspecific competition, conservation, preservation	**6.1.3:** DNA sequencing, bioethics, nanotechnology, polymorphism, primer, oncogenes, polymerase chain reaction, electrophoresis, DNA ligase, electroporation, plasmid, recombinant DNA, restriction enzyme, vector, electrofusion, methylated, germ line gene therapy, somatic cell gene therapy	
Where previous knowledge has occurred and future development **KS2 → KS3 → KS4 → KS5**	KS2: How animals interact with their environment KS3: Y7 – Cells KS3: Y8 - Ecology KS4: Y10 – Cell structure (B1) KS4: Y10 – Photosynthesis (B4) KS4: Y11 – Ecology (B7) KS5: Ecology, ultrastructure of cells	KS2: Inheritance and evolution KS3: Y9 – Genetics KS4: Y10 – Pathogens and disease (B3) KS4: Y11 – Genetics (B6) KS4: Y11 – Adaptations (B7) KS5: Cell ultrastructure, respiration	KS2: Inheritance KS3: Inheritance KS4: Y11 Protein synthesis (B6) KS4: Y11 – Biotechnology (B7) KS5: Protein synthesis, prokaryotic structures	KS2: Interactions with animals and the environment KS3: Y8 – Ecology KS3: Y9 – Genetics KS4: Y11 – Sexual and asexual reproduction (B6) KS4: Y11 – Genetic crosses (B6) KS4: Y11 – Ecology (B7) KS5: Ecology, statistical analysis	KS2: Inheritance KS3: Y7 - Cells KS3: Y9 – Genetics KS4: Y10 – Cells (B1) KS4: Y11 – Genetics (B6) KS4: Y11 – Genetic engineering (B6) KS5: Nucleotides, protein synthesis, replication	
Common Misconceptions	4.2: Conservation is only in zoos and Africa 5.2: Only light affects photosynthesis	4.2: Evolution is a fast process 4.1: All disease is infectious	6.1.1: Mutations are negative 6.2.1: Cloning isn't commercially available	6.1.2: Heterozygous crosses produce an in-between 6.3.1: Biomass and mass are the same thing	6.1.3: Genetic engineering produces mutants	
Literacy	Scientific writing (HSW): PAG 3 Scientific writing (HSW): PAG 6 NHTW reviews as starter activities	Scientific writing (HSW): PAG 11 Writing to describe: Evolution NHTW reviews as starter activities	Scientific writing (HSW): PAG 7 Writing to argue: Arguments for and against cloning NHTW reviews as starter activities	Writing to argue: Ethical considerations surrounding the use of artificial selection NHTW reviews as starter activities	Writing to evaluate: Evaluating the impact of genetic engineering NHTW reviews as starter activities	
Numeracy	Calculating means Statistical analysis	Statistical analysis Rearranging formulae	Statistical analysis Standard form	Statistical analysis Drawing and interpreting graphs	Standard form	

	Drawing and interpreting graphs		Logs	Standard form		
Homework	Completion of Seneca section quizzes	Completion of Seneca section quizzes	Completion of Seneca section quizzes	Completion of Seneca section quizzes	Completion of Seneca section quizzes	
Assessment this half-term	PAG 3 PAG 6 5.2 Mini test	Mock exam: Papers 1, 2 & 3 PAG 11	Mock exam: Papers 1, 2 & 3 PAG 7	Mock exam: Papers 2 & 3 PAG 3	Practice papers 1, 2 & 3 PAG 12	
Career opportunities **Employment Links**	LIFE SKILLS: Understanding how conservation programmes work EMPLOYMENT: Environment Agency	LIFE SKILLS: Understanding how diseases spread EMPLOYMENT: Immunologist	LIFE SKILLS: EMPLOYMENT:	LIFE SKILLS: EMPLOYMENT:	LIFE SKILLS: Understanding the role of GM foods EMPLOYMENT: Research scientist	
Enrichment	Chester Zoo visit, Field visit to Mawbray, Dent and Ennerdale			Nancy Rothwell Award		
Practical activities/HSW	PAG 3: Ecology PAG 6: TLC Factors affecting photosynthesis	PAG 11: Investigating heart rate	PAG 7: Aseptic techniques	PAG 3: Ecology	PAG 12: Research project	
Employability Skills	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	Aiming high Literacy Creativity Numeracy Leadership Independence Listening Communication Presenting Teamwork Problem solving Staying positive	
IT Skills	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	