Biology
Year 11
Personalised Learning Checklist

WJEC Biology Separate from 2016 Unit 2 2.1 - 2.8

Topic	Student Checklist	R	A	G
2.1 Classification and biodiversity	Describe how plants can be broadly grouped int to two groups - non-flowering and flowering			
	Descrbe how animals can be group as invertebrates and vertebrates			
	Describe how andimals are classified into groups by their similar characteristics and features			
	Explain the need for a scientific system for identification and the need for scientific as opposed to 'common' names			
	Explain how morphological and behavioural adaptations enable organisms to survive in their environment			
	Name resources in an environment that individual organisms need			
	Describe how the size of a population may be affected by competition for resources			
	Define the term biodiversity and describe why biodiversity is important			
	Describe how biodiversity and endangered species can be protected including issues surrounding the use of legislation			
	Explain how quadrats can be used to investigate the abundance of species			
	Describe the principles of sampling; the need to collect sufficient data			
	HT only: Describe the principles of capture/recapture techniques			
	HT only: Calculate an estimated population size			

	Evaluate the use of biological control agents			
	Spec prac: Investigate factors affecting the distribution and abundance of a species			
2.2 Cell division and stem cells	Describe the structure of a chromosome			
	Describe how cells divide by mitosis and meiosis			
	Compare the outcomes of mitotic and meiotic division			
	Describe how mitosis, if uncontrolled, can cause cancer			
	Define the term stem cell			
	Describe the potential of both adult and embryonic stem cells to replace damaged tissue			
2.3 DNA and inheritance	Describe the structure of DNA to include the four types of base			
	Explain how bases for a code for making different proteins			
	HT only: Name the four bases present in DNA			
	Define the term complimentary base pairing			
	HT only: Describe the role of the triplet code during protein synthesis			
	Explain the process of 'genetic profiling'			
	Describe how 'genetic profiling' can be used to show the similarity between two DNA samples			
	Evaluate the benefits of DNA profiling			
	Define the term gene and allele			
	Define key terms in the study of inheritance			
	Complete Punnett squares to show single gene inheritance			
	Predict the outcomes of monohybrid crosses including ratios			
	Describe the fact that most phenotypic features are the result of multiple genes			
	Describe how sex determination in humans is determined by one pair of chromasomes			
	Describe the artificial transfer of genes from one organism to another			
	Evaluate the process of genetic engineering			
2.4 Variation and evolution	Describe the causes of variation in individuals as having environmental or genetic causes			
	HT only: Explain how variation can be continuous or discontinuous			
	Explain how sexual reproduction leads to genetic differences from the parents and therefore leads to variation			

	Explain how asexual reproduction produces genetically identical offspring			
	Describe how genes can be mutated and how some mutations can be beneficial or harmful			
	Explain how mutation rates can be increase			
	Describe how genetic mutations causing conditions can be passed on in families			
	Evaluate the development and use of gene therapy in cystic fibrosis sufferers			
	Describe evolution in terms of heritable variation			
	Explain how an organisms adaptations to an environment make them more likely to survive			
	Describe natural selection as proposed by Alfred Russell Wallace and Charles Darwin			
	Explain how the process of natural selection is sometimes too slow leading to extinction			
	Describe how evolution is an ongoing process, using resistance to antibiotics, pesticides and warfarin as examples			
	Explain how undertanding of the human genome is important for developments in medicine			
	Spec prac: Investigate variation in organisms			

Personalised Learning Checklist

WJEC Biology Separate from 2016 Unit 2 2.5 - 2.8

Topic	Student Checklist	R	A	G
2.5 Response and regulation	Describe the sense organs and their function			
	Describe the structure of the central nervous system			
	Recall the properties of reflex actions with named examples			
	HT only: Describe the components of a reflex arc			
	Bio only: Label a diagram of the eye			
	Bio only: Describe the function of different parts of the eye			
	Describe the importance of homeostasis in animals			
	Describe the function and action of hormones in the body			
	Describe the importance of keeping blood glucose levels within a constant range			
	Explain how the pancrease maintains blood glucose levels			
	Describe the causes and treatments for both type 1 and type 2 diabetes			

	Label a diagram of the skin			
	Describe the role of these structures in temperture regulation			
	HT only: Explain how negative feedback mechanisms maintain optimum conditions inside the body			
	Describe how some conditions are affected by lifestyle choices (alcohol, drugs and Type 2 diabetes)			
	Explain how auxin allows plants to show tropisms			
	Spec prac: Investigate factors that affect reaction time			
2.6 Role of kidney in homeostasis	Describe how the kidneys regulate water content of the blood and remove waste products from the blood			
	Label a diagram of the excretory system			
	Label the structure of a section through a kidney			
	HT only: Label the structure of a nephron and its associated blood supply			
	HT only: Describe why the level of substances present in the filtrate changes as it passes through the kidney			
	Describe the terms urea and urine and their journey from the kidney to the bladder			
	Recall that the presence of blood or cells or the presence of glucose in the urine can indicate various diseases			
	Describe how the kidneys regulate the water content of the blood			
	HT only: Describe the role of anti-diuretic hormone in regulating water content of the blood			
	Explain how dialysis can be used to treat kidney failure			
	HT only: Explain how a dialysis machine works			
	Describe how a diseased kidney may be replaced by a healthy one by transplant			
	Describe why drugs are taken which suppress the immune response after a transplant			
	Evaluate the use of dialysis and transplants			
	Spec prac: Test urine samples for the presence of protein and glucose			
2.7 Micro-organisms	*Bio only: Describe the basic aseptic techniques involved in inoculating, plating and incubating micro-organisms*			
	Bio only: Explain how we link the number of bacterial colonies on the agar and the number of bacteria in the original sample			
	Bio only: Describe the effect of temperature on the growth of bacteria and understand its application in food storage			
	Bio only: Descrbie the factors which influence the growth of the fungus Penicillium when grown industrially in a fermenter			
	Bio only: Describe how the penicillin is extracted from the surrounding medium			
	Spec prac + Bio only: Investigate the effects of antibiotics on bacterial growth			

2.8 Diseases, defence and treatment	Describe the harmless nature of most micro-organisms however some micro-organisms called pathogens, cause disease			
	Name the four main pathogens			
	Label the basic structure of pathogens to include; bacteria and viruses			
	Describe the types of organisms which can cause communicable diseases and the means by which they can be spread			
	Bio only: Describe how HIV / AIDS, Chlamydia and Malaria are caused, effect the body and how they can be prevented from spreading			
	Describe the means by which the body defends itself from disease			
	Explain how an antigen is produced and the function of antibodies			
	Bio only: Describe how vaccination can be used to protect humans from infectious disease			
	Bio only: Evaluate the decisions about whether to have children vaccinated or not			
	HT only: Describe how a vaccine works			
	HT only: Describe the role of memory cells in immuinty			
	Describe the action of antibiotics			
	Explain how some resistant bacteria, such as MRSA, can result from the over use of antibiotics			
	Describe how some conditions can be prevented by treatment with drugs or by other therapies			
	Describe why new drug treatmentsmust be rigorously tested			
	Evaluate the ethical issues involved in the development of new drug treatments, including the use of animals for testing drugs			
	Bio only: Describe the stages involved with testing potential new medicines			
	HT + Bio only: Expalin how monoclonal antibodies are produced			
	HT + Bio only: Describe the medical uses of monoclonal antibodies			