

Year	Week	Lesson title	Lesson objectives	Practical	AQA specification reference
Year 10	½	Learning about the circulatory system	<ul style="list-style-type: none"> Identify the parts of the circulatory system. Describe the functions of the parts of the circulatory system. Explain how the structure of each part of the circulatory system relates to its function. 		4.2.2.2; 4.2.2.3
Year 10	½	Exploring the heart	<ul style="list-style-type: none"> Describe the structure and functions of the heart. Identify the functions and adaptations of the parts of the heart. Explain the movement of blood around the heart. 	Heart dissection	4.2.2.2
Year 10	¾	Studying blood	<ul style="list-style-type: none"> Identify the parts of the blood and their functions. Explain the adaptations of red blood cells. Explain how red blood cells and haemoglobin transport oxygen efficiently. 		4.2.2.3
Year 10	¾	Investigating gas exchange	<ul style="list-style-type: none"> Identify the parts of the human gas exchange system and know their functions. Explain how gas exchange occurs in humans. Explain the adaptations of the gas exchange surfaces. 	Lung dissection demo Bell jar	4.1.3.1; 4.2.2.2
Year 10	¾	Learning about coronary heart disease	<ul style="list-style-type: none"> Identify the causes and symptoms of coronary heart disease and heart failure. Describe possible treatments of coronary heart disease and heart failure. Evaluate the possible treatments of coronary heart disease and heart failure. 		4.2.2.4
Year 10	5/6	Learning about health	<ul style="list-style-type: none"> Recall the difference between health and disease. Explain how some diseases interact. Evaluate data about lifestyle and health. 		4.2.2.6; 4.2.2.7
Year 10	5/6	Risk Factors for non-communicable disease: Alcohol	<ul style="list-style-type: none"> Recall the causes of some non-communicable diseases. Describe the impact of lifestyle on non-communicable diseases. Explain the impact of lifestyle on non-communicable diseases. 		4.2.2.6
Year 10	7/8	Risk factors: smoking	<ul style="list-style-type: none"> Identify risk factors for cancer. Explain the differences between types of tumours. Explain the impact of non-communicable diseases 	Smoking demo.	4.2.2.6; 4.2.2.7
Year 10	7/8	Risk factors: obesity	<ul style="list-style-type: none"> Describe some health problems caused by a poor diet and lack of exercise. Describe causal mechanisms for the link between exercise and health Suggest reasons for the correlation between exercise and health, and decide which are causal. 		
Year 10	7/8	Studying pathogens	<ul style="list-style-type: none"> Recall the definition of a pathogen. Explain how communicable diseases can be controlled. Distinguish between epidemics and pandemics. 		4.3.1.1
Year 10	7/8	Learning about viral diseases	<ul style="list-style-type: none"> Describe the symptoms of some viral diseases. Describe the transmission and control of some viral diseases. Explain how some viral diseases are spread. 		4.3.1.2

Year 10	9/10	Studying bacterial diseases	<ul style="list-style-type: none"> Describe the symptoms of some bacterial diseases. Explain how some bacterial diseases can be controlled. Compare and contrast bacterial and viral diseases. 		4.3.1.3
Year 10	9/10	Looking at fungal diseases	<ul style="list-style-type: none"> Recall the name and symptoms of a fungal disease. Describe the transmission and treatment of rose black spot. Explain how rose black spot affects the growth of the plant. 		4.3.1.4
Year 10	9/10	Learning about malaria	<ul style="list-style-type: none"> Recall that malaria is a protist disease. Describe the lifecycle of the malarial vector. Evaluate control methods for the spread of malaria. 		4.3.1.5
Year 10	9/10	Protecting the body	<ul style="list-style-type: none"> Describe how the body protects itself from pathogens. Explain how the body protects itself from pathogens. Explain how communicable diseases can be spread. 		4.3.1.6
Year 10	11/12	Exploring white blood cells	<ul style="list-style-type: none"> Describe phagocytosis. Explain how antibody production can lead to immunity. Explain the specificity of immune system responses 		4.3.1.6
Year 10	11/12	Building immunity	<ul style="list-style-type: none"> Recall how vaccinations prevent infection. Explain how mass vaccination programmes reduce the spread of a disease. Evaluate the global use of vaccination. 		4.3.1.7
Year 10	13/14	Using antibiotics and painkillers	<ul style="list-style-type: none"> Describe the uses of antibiotics and painkillers. Explain how antibiotics and painkillers can be used to treat diseases. Explain the limitations of antibiotics. 		4.3.1.8
Year 10	13/14	Required Prac 2: Analysing bacterial growth	<ul style="list-style-type: none"> state what is meant by aseptic technique write a detailed plan to investigate the effectiveness of different antiseptics or antibiotics on bacterial growth identify hazards in this practical procedure and describe how they can be controlled 	Required Prac 2: Analysing bacterial growth	1.1.6
Year 10	13/14	Making new drugs	<ul style="list-style-type: none"> Recall some traditional drugs and their origins. Describe how new drugs are developed. Explain why 'double-blind' trials are conducted. 	Mock drug trial with 2 types of chocolate	4.3.1.9
Year 10	15/16	Investigating monoclonal antibodies (high demand only)	<ul style="list-style-type: none"> Describe uses of monoclonal antibodies. Explain how monoclonal antibodies are produced. Evaluate the use of monoclonal antibodies. 		4.3.2.1; 4.3.2.2
Year 10	15/16	Looking at plant diseases	<ul style="list-style-type: none"> Recall the causes of plant diseases. Describe the symptoms and identification methods of some plant diseases. Explain the use of monoclonal antibodies in identifying plant pathogens. 		4.3.3.1
Year 10	15/16	Learning about plant defences	<ul style="list-style-type: none"> Recall some physical plant defence responses. Explain how mechanical plant defence systems help them survive. Explain how chemical plant defence systems help them survive. 		4.3.3.2
Year 10	15/16	Homeostasis	<ul style="list-style-type: none"> Explain the importance of homeostasis in regulating internal conditions in the body. Recall that these control systems involve nervous or chemical responses. 		4.5.1

			<ul style="list-style-type: none"> Describe how control systems involve receptors, coordination centres and effectors. 		
Year 10	17/18	The nervous system	<ul style="list-style-type: none"> Describe the structure and function of the nervous system. Explain how the nervous system is adapted to its functions. Describe the structure of sensory, motor and relay neurones. 		4.5.2.1
Year 10	17/18	Reflex actions	<ul style="list-style-type: none"> Explain the importance of reflex actions. Describe the path of a reflex arc. Explain how the structures in the reflex arc relate to their function. 		4.5.2.1
Year 10	19/20	The brain	<ul style="list-style-type: none"> Recall that the brain controls complex behaviour using billions of interconnected neurones. Identify the three main regions of the brain and describe their functions. Describe how the regions of the brain are mapped. 	Brain model	4.5.2.2
Year 10	19/20	Required practical: Investigating reaction time	<ul style="list-style-type: none"> Select appropriate apparatus and techniques for the measurement of biological processes. Carry out physiological experiments safely. Use appropriate techniques in problem-solving contexts. 	Required practical: Investigating reaction time	4.5.2.1
Year 10	21/22	The eye	<ul style="list-style-type: none"> Relate the structures of the eye to their functions. Explain how the eye is adapted to seeing in colour and in dim light. Understand how the eye is able to focus on near or distant objects. 	Eye model	4.5.2.3
Year 10	21/22	Eye defects	<ul style="list-style-type: none"> Describe and understand why short-sightedness (myopia) occurs. Describe and understand why long-sightedness (hyperopia) occurs. Demonstrate how techniques are used to correct eye defects. 		4.5.2.3
Year 10	21/22	Controlling body temperature	<ul style="list-style-type: none"> Describe the mechanisms by which body temperature is controlled when too hot or cold. Explain how body temperature can be controlled in a specific context. 		4.5.2.4
Year 10	23/24	The endocrine system	<ul style="list-style-type: none"> Recall that the endocrine system is made up of glands that secrete hormones into the blood. Know the location of the major endocrine glands. Understand why the pituitary gland is the 'master gland'. Describe the effects of adrenaline. 		4.5.3.1
Year 10	25/26	Controlling blood glucose	<ul style="list-style-type: none"> Recall that blood glucose is monitored and controlled by the pancreas. Understand how insulin controls blood glucose levels. Understand how insulin works with another hormone – glucagon – to control blood sugar levels. 		4.5.3.2; 4.5.3.7
Year 10	25/26	Diabetes	<ul style="list-style-type: none"> Understand the causes of Type 1 and Type 2 diabetes. Compare Type 1 and Type 2 diabetes. Evaluate information on the relationship between obesity and diabetes, and make appropriate recommendations. 	Testing "urine samples" for glucose (Benedicts)	4.5.3.2; 4.5.3.7
Year 10	25/26	Water balance	<ul style="list-style-type: none"> Recall the ways in which the body loses water. Explain why cells do not function efficiently if they lose or gain too much water. Explain how excess protein is converted to urea for excretion. 		4.5.3.3; 4.5.3.7

Year 10	25/26	The kidneys	<ul style="list-style-type: none"> Recall that excess water, ions and urea are removed from the body by the kidneys in urine. Describe how the kidneys produce urine. Explain how the hormone ADH regulates the amount of water in the urine, and therefore, in the body. 	Kidney dissection	4.5.3.3
Year 10	27/28	Kidney failure	<ul style="list-style-type: none"> Recall that people who suffer from kidney failure can be treated by dialysis or kidney transplant. Understand the principles of dialysis. Evaluate the advantages and disadvantages of treating organ failure using a mechanical device or transplant. 		4.5.3.3
	27/28	Dialysis or transplant?	<ul style="list-style-type: none"> Describe different forms of dialysis. Use data to draw conclusions. Use data to evaluate the advantages and disadvantages of dialysis and kidney donation. 		4.5.3.3
Year 10	27/28	Negative feedback (Higher tier only)	<ul style="list-style-type: none"> Explain the role of thyroxine in the body. Understand the principles of negative feedback, as applied to thyroxine. 		
Year 10	27/28	Human reproduction & contraception	<ul style="list-style-type: none"> Describe the roles of hormones in sexual reproduction. Describe hormonal methods and non-hormonal methods of contraception. Describe the advantages and disadvantages of different contraceptive methods. 	Contraception tray Baby in a box	4.5.3.4
Year 10	29/30	The Menstrual Cycle	<ul style="list-style-type: none"> Describe the roles of hormones in sexual reproduction. Explain how hormones interact in the menstrual cycle. 		
Year 10	29/30	IVF (Higher tier only)	<ul style="list-style-type: none"> Explain the use of hormones in technologies to treat infertility. Describe the technique of in-vitro fertilisation. Evaluate the scientific, emotional, social and ethical issues of in-vitro fertilisation. 		4.5.3.6
Year 10	31/32	Auxins	<ul style="list-style-type: none"> Recall that plants produce hormones to coordinate and control growth, and responses to light and gravity. Describe how unequal distributions of auxins cause unequal growth rates in plant shoots and roots. Explain that auxins act on 'stem cells' in plants called meristems. Describe some applications of auxins. 		4.5.4.1; 4.5.4.2
Year 10	31/32	Required practical: The effect of light and gravity on the growth of germinating seeds	<ul style="list-style-type: none"> Describe how an experiment is planned for a specific purpose. Make and record observations and translate data from one form to another. Interpret observations and other data, identifying patterns and trends, make inferences and draw conclusions. 	Required practical: The effect of light and gravity on the growth of germinating seeds	4.5.4.1
Year 10	31/32	Uses of plant hormones (Higher tier only)	<ul style="list-style-type: none"> Recall that gibberellins are important in seed germination, and ethene in cell division and ripening of fruit. Explain the application of the plant hormones ethane and gibberellins. 		4.5.4.2

Year 10	31/32	DNA and genes	<ul style="list-style-type: none"> Describe the structure of DNA. Describe a gene as a small section of DNA that codes for a protein. 		4.6.1.4; 4.6.1.5
Year 10	33/34	The human genome	<ul style="list-style-type: none"> Describe a gene as a small section of DNA that codes for a protein. Explain the importance of understanding the human genome. 		4.6.1.4; 4.6.1.5
Year 10	33/34	Tracing human migration	<ul style="list-style-type: none"> Explain the importance of understanding the human genome. Discuss the use of the human genome in understanding human migration patterns. 		4.6.1.4; 4.6.1.5
Year 10	33/34	The structure of DNA	<ul style="list-style-type: none"> Describe the structure of DNA as repeating nucleotide units. Identify the four bases in DNA. Explain that the bases A and T, and C and G, are complementary. 	DNA models	4.6.1.5
Year 10	33/34	Proteins	<ul style="list-style-type: none"> Describe how proteins are synthesised according to the DNA template of a gene. Explain that the genetic code of a gene specifies the protein to be made. 		4.6.1.5
Year 10	35/36	Mutations	<ul style="list-style-type: none"> Model changes to the base sequences of DNA to illustrate mutations. Describe the negative and, sometimes, positive effects of mutations. Describe how mutations can affect protein function. 		4.6.1.5
Year 10	35/36	Meiosis	<ul style="list-style-type: none"> Explain how meiosis halves the number of chromosomes for gamete production. Explain how fertilisation restores the chromosome number. Understand that the four gametes produced by meiosis are genetically different. 		4.6.1.1; 4.6.1.2; 4.6.1.8
Year 10	35/36	Asexual and sexual reproduction	<ul style="list-style-type: none"> Understand that asexual reproduction involves just one parent and produces genetically identical offspring. Understand that sexual reproduction leads to variety in the offspring. 		4.6.1.1; 4.6.1.3
Year 11	½	Genetics	<ul style="list-style-type: none"> Understand and be able to use genetics terms, such as dominant, recessive, genotype, phenotype, homozygous and heterozygous. Know that some human conditions are caused by a recessive allele. 		4.6.1.6; 4.6.1.7
Year 11	2/3	Genetic crosses	<ul style="list-style-type: none"> Use the terms dominant, recessive, genotype, phenotype, homozygous and heterozygous. Know that some human conditions, such as cystic fibrosis, are caused by a recessive allele. Complete or construct a Punnett square to predict the outcome of a genetic cross. 		4.6.1.6; 4.6.1.7
Year 11	2/3	Gene disorders	<ul style="list-style-type: none"> Understand the use of a family tree to show the inheritance of a characteristic. Explain economic, social and ethical issues concerned with embryo screening. 		4.6.1.6; 4.6.1.7
Year 11	2/3	Gregor Mendel & genetic diagrams	<ul style="list-style-type: none"> Plan experiments to explore phenomena and test hypotheses Draw conclusions from given observations Evaluate data in terms of reproducibility. 		

Year 11	2/3	Using Family Trees	<ul style="list-style-type: none"> Understand the use of a family tree to show the inheritance of a characteristic. Explain economic, social and ethical issues concerned with embryo screening. 		4.6.1.5
Year 11	4/5	Genetic testing	<ul style="list-style-type: none"> Outline the methods used to screen embryos. Explain how screening shows whether an embryo has a genetic disorder. Make an informed judgement about embryo screening by evaluating in detail the economic, social, and ethical issues. 		4.6.1.5
Year 11	4/5	Variation	<ul style="list-style-type: none"> Recall that differences in the characteristics of individuals in a population is called variation. Understand the genetic and environmental differences leading to variation. 	Variation prac with height measurer, tape measures	4.6.2.1
Year 11	4/5	The theory of evolution	<ul style="list-style-type: none"> Recall that all species of living things have evolved from simple life forms. Explain how evolution occurs through natural selection, Recognise how Darwin and Wallace proposed, independently, the theory of evolution 		4.6.2.2
Year 11	4/5	Natural selection	<ul style="list-style-type: none"> Explain the evidence that led Darwin to propose the theory of evolution by natural selection. Describe the process of natural selection. 		4.6.3.1
Year 11	6/7	Fossil evidence	<ul style="list-style-type: none"> Understand how, and the situations in which, fossils are formed. Understand how fossils are used as evidence for evolution of species from simpler life forms. Understand why the fossil record is incomplete. 	Fossil tray	4.3.6.4; 4.3.6.5
Year 11	8/9	Evidence for evolution	<ul style="list-style-type: none"> Understand why the fossil record is incomplete. Use the fossil record to understand how much, or how little, organisms have changed as life developed on Earth. 		4.6.3.5
Year 11	8/9	Speciation	<ul style="list-style-type: none"> Understand that when natural selection operates differently on populations, a new species is produced. Understand that during evolution, new species are formed when populations become so different that they can no longer interbreed. 		4.6.3.2
Year 11	8/9	Mendel	<ul style="list-style-type: none"> Understand how scientific theories develop over time. Describe the work of Mendel, Darwin and Wallace. Explain how they contributed to the theory of evolution. Appreciate that many scientists have contributed to the gene theory. 		4.6.3.4
Year 11	8/9	Antimicrobial resistance	<ul style="list-style-type: none"> Recall that bacteria develop that are resistant to antibiotics, which is evidence of evolution. Understand the mechanism by which antibiotic resistance develops. Understand the effects of the development of antibiotic resistance on the treatment of disease. Describe how to reduce the rate of development of antibiotic resistance. 		4.6.3.7
Year 11	10/11	Selective breeding	<ul style="list-style-type: none"> Describe the process of selective breeding. Recall how selective breeding enables humans to choose desirable characteristics in animals and plants. Explain how selective breeding can lead to inbreeding. 		4.6.2.3

Year 11	10/11	Producing new plant varieties	<ul style="list-style-type: none"> Describe the process of selective breeding. Recall how selective breeding enables humans to choose desirable characteristics in plants. Evaluate the benefits and risks of selective breeding in plants. 		4.6.2.3
Year 11	10/11	Genetic engineering	<ul style="list-style-type: none"> Explain what is meant by the term genetic engineering. Give examples of how plant crops have been genetically engineered to improve products. Describe how fungus cells are engineered to produce human insulin 		4.6.2.4
Year 11	10/11	Genetically modified crops: the science	<ul style="list-style-type: none"> Explain the benefits of genetic modification in a range of crops. Explain the concerns about genetic modification. Explain the ethical concerns about genetic engineering. 		4.6.2.4
Year 11	12/13	Is genetic modification safe?	<ul style="list-style-type: none"> Explore the benefits of genetic modification in medicine. Explain the concerns that people have about genetic modification. Explain the possible safety issues of genetic engineering in agriculture and medicine. Explain the ethical issues of genetic engineering in agriculture and medicine. 		4.6.2.4
Year 11	12/13	Cloning	<ul style="list-style-type: none"> Describe how cuttings and tissue culture are used to produce new plants. Describe the use of embryo transplants and adult cell cloning in animals. 	Taking cuttings/ tissue culture	4.6.2.5
Year 11	14/15	Classification	<ul style="list-style-type: none"> Describe how living things have been classified into groups using a system devised by Linnaeus. Describe how new models of classification have developed. 		4.6.4
Year 11	14/15	Extinction	<ul style="list-style-type: none"> List the causes of extinction. Explain how new predators, competitors and diseases can lead to extinctions. 		4.6.3.6
Year 11	14/15	Ecosystems	<ul style="list-style-type: none"> Describe what an ecosystem is. Explain the importance of high biodiversity. Explain what is meant by a self-supporting ecosystem 		4.7.1.1; 4.7.3.1
Year 11	14/15	Biotic & abiotic factors	<ul style="list-style-type: none"> Identify abiotic factors that affect ecosystems. Explain changes in the distribution of species in an ecosystem. Describe stable and unstable populations. 		4.7.1.2; 4.7.2.4
Year 11	16/17	Investigating predator–prey relationships	<ul style="list-style-type: none"> Describe how changes in one population affect another. Explain interdependent relationships. Explain how predator–prey population cycles have cyclical changes. 		4.7.2.1
Year 11	16/17	Looking at trophic levels	<ul style="list-style-type: none"> Explain trophic levels. Explain and construct pyramids of biomass. Explain the difficulties in constructing pyramids. 		4.7.2.1; 4.7.4.1; 4.7.4.2
Year 11	16/17	Pyramids of biomass	<ul style="list-style-type: none"> Identify how biomass is lost. Calculate the efficiency of biomass transfers. Explain the impact of biomass loss on the numbers of organisms. 		4.7.4.3

Year 11	16/17	Competition	<ul style="list-style-type: none"> Describe how competition impacts on populations. Explain why animals in the same habitat are in competition. Explain interspecific and intraspecific competition. 		4.7.1.1
Year 11	16/17	Required practical: Measure the population size of a common species in a habitat	<ul style="list-style-type: none"> Describe a suitable method to investigate a population. Estimate the size of a population. Explain the effect of sample size. 	Required practical: Measure the population size of a common species in a habitat (quadrats)	4.7.2.1
Year 11	18/19	Adapting for survival in animals	<ul style="list-style-type: none"> Recall why animals have adaptations. Explain some adaptations. Use surface-area-to-volume ratios to explain some adaptations. 		4.7.1.4
Year 11	20/21	Adapting for survival in plants	<ul style="list-style-type: none"> Identify some adaptations of plants and bacteria. Explain the importance of plant adaptations. Explain a range of plant adaptations. 		4.7.1.4
Year 11	20/21	Cycling materials	<ul style="list-style-type: none"> Recall that many materials are recycled in nature. Explain the stages in the water and decay cycles. Explain the importance of recycling materials. 		4.7.2.2; 4.7.4.1
Year 11	20/21	Cycling carbon	<ul style="list-style-type: none"> Recall that plants take in carbon as carbon dioxide. Explain how carbon is recycled. Interpret a diagram of the carbon cycle. 		4.7.2.2
Year 11	20/21	Investigating decay	<ul style="list-style-type: none"> Recall the factors needed for decay. Describe how different factors affect decay. Explain extracellular digestion. 		4.7.2.2
Year 11	22/23	Investigate the effect of temperature on the rate of decay of fresh milk by measuring pH change	<ul style="list-style-type: none"> Describe how safety is managed, apparatus is used and accurate measurements are made. Make and record observations and make accurate measurements. Evaluate methods and suggest possible improvements and further investigations. 	Req prac: effect of temperature on the rate of decay of fresh milk	4.7.2.3
Year 11	22/23	Changing the environment	<ul style="list-style-type: none"> Recall causes of environmental change. Describe the impact of environmental change. Explain the impact of an environmental change. 		4.7.2.4; 4.7.3.1; 4.7.3.2
Year 11	22/23	Deforestation & Peat bog destruction	<ul style="list-style-type: none"> Identify why land use has changed. Identify the reasons for deforestation. Describe the impact of peat bog destruction and deforestation. Evaluate the destruction of peat bogs and forests. 		4.7.3.3
Year 11	24/25	Thinking about global warming	<ul style="list-style-type: none"> Recall what global warming is. Describe the causes of global warming. Explain how global warming impacts on biodiversity. 		4.7.3.5
Year 11	24/25	Looking at waste management	<ul style="list-style-type: none"> Describe how waste production is linked to human population growth. Describe the impact of waste on ecosystems. Explain how waste impacts on biodiversity. 		4.7.3.2
Year 11	26/27	Investigating pollution	<ul style="list-style-type: none"> Identify pollution levels using indicator species. Explain how indicator species measure pollution. Compare different methods of measuring pollution. 		4.7.3.2

Year 11	26/27	Maintaining biodiversity	<ul style="list-style-type: none"> • Describe some conservation measures. • Describe the impact of breeding programmes. • Explain how habitats are regenerated. 		4.7.3.6
Year 11	26/27	Learning about food security	<ul style="list-style-type: none"> • Identify factors affecting food security. • Describe how different factors affect food security. • Interpret data to evaluate food security. 		4.7.5.1
Year 11	26/27	Maintaining food security	<ul style="list-style-type: none"> • Describe some intensive farming methods. • Explain ethical issues related to intensive farming. • Evaluate modern farming techniques. • Describe methods to maintain sustainable fisheries. 		4.7.5.2
Year 11	28/29	Using biotechnology	<ul style="list-style-type: none"> • Describe some uses of biotechnology. • Explain the advantages of some uses of biotechnology. • Evaluate some uses of biotechnology. 		4.7.5.4