

# HSC Biology

## *Exam Planner*

*Your guide for exam goal-setting,  
preparation and success.*



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# Subject: Biology

EXAM DATE .....

GOAL .....

Topic: Heredity	Do I have it in my notes?	Note-making deadline	Memorising deadline
Explain the mechanisms of reproduction that ensure the continuity of a species, by analysing sexual and asexual methods of reproduction in a variety of organisms, including but not limited to:			
Animals: advantages of external and internal fertilisation			
Plants: asexual and sexual reproduction			
Fungi: budding, spores			
Bacteria: binary fission (ACSBL075)			
Protists: binary fission, budding			
Analyse the features of fertilisation, implantation and hormonal control of pregnancy and birth in mammals (ACSBL075)			
Evaluate the impact of scientific knowledge on the manipulation of plant and animal reproduction in agriculture (ACSBL074)			
Model the processes involved in cell replication, including but not limited to:			
Mitosis and meiosis (ACSBL075)			
DNA replication using the Watson and Crick DNA model, including nucleotide composition, pairing and bonding (ACSBL076, ACSBL077)			
Assess the effect of the cell replication processes on the continuity of species (ACSBL084)			

Construct appropriate representations to model and compare the forms in which DNA exists in eukaryotes and prokaryotes (ACSBL076)			
Model the process of polypeptide synthesis, including: (ACSBL079)			
Transcription and translation			
Assessing the importance of mRNA and tRNA in transcription and translation (ACSBL079)			
Analysing the function and importance of polypeptide synthesis (ACSBL080)			
Assessing how genes and environment affect phenotypic expression (ACSBL081)			
Investigate the structure and function of proteins in living things			
Conduct practical investigations to predict variations in the genotype of offspring by modelling meiosis, including the crossing over of homologous chromosomes, fertilisation and mutations(ACSBL084)			
Model the formation of new combinations of genotypes produced during meiosis, including but not limited to:			
Interpreting examples of autosomal, sex-linkage, co-dominance, incomplete dominance and multiple alleles (ACSBL085)			
Constructing and interpreting information and data from pedigrees and Punnett squares			
Collect, record and present data to represent frequencies of characteristics in a population, in order to identify trends, patterns, relationships and limitations in data, for example:			
Examining frequency data			
Analysing single nucleotide polymorphism (SNP)			
Investigate the use of technologies to determine inheritance patterns in a population using, for example:(ACSBL064, ACSBL085)			
DNA sequencing and profiling (ACSBL086)			

Investigate the use of data analysis from a large-scale collaborative project to identify trends, patterns and relationships, for example:(ACSBL064, ACSBL073)			
The use of population genetics data in conservation management			
Population genetics studies used to determine the inheritance of a disease or disorder			
Population genetics relating to human evolution			
<b>Topic: Genetic change</b>	<b>Do I have it in my notes?</b>	<b>Note-making deadline</b>	<b>Memorising deadline</b>
Explain how a range of mutagens operate, including but not limited to:			
Electromagnetic radiation sources			
Chemicals			
Naturally occurring mutagens			
Compare the causes, processes and effects of different types of mutation, including but not limited to:			
Point mutation			
Chromosomal mutation			
Distinguish between somatic mutations and germ-line mutations and their effect on an organism(ACSBL082, ACSBL083)			
Assess the significance of 'coding' and 'non-coding' DNA segments in the process of mutation(ACSBL078)			
Investigate the causes of genetic variation relating to the processes of fertilisation, meiosis and mutation(ACSBL078)			
Evaluate the effect of mutation, gene flow and genetic drift on the gene pool of populations(ACSBL091, ACSBL092)			

Investigate the uses and applications of biotechnology (past, present and future), including:(ACSBL087)			
Analysing the social implications and ethical uses of biotechnology, including plant and animal examples			
Researching future directions of the use of biotechnology			
Evaluating the potential benefits for society of research using genetic technologies			
Evaluating the changes to the Earth's biodiversity due to genetic techniques			
Investigate the uses and advantages of current genetic technologies that induce genetic change			
Compare the processes and outcomes of reproductive technologies, including but not limited to:			
Artificial insemination			
Artificial pollination			
Investigate and assess the effectiveness of cloning, including but not limited to:			
Whole organism cloning			
Gene cloning			
Describe techniques and applications used in recombinant DNA technology, for example:			
The development of transgenic organisms in agricultural and medical applications(ACSBL087)			
Evaluate the benefits of using genetic technologies in agricultural, medical and industrial applications(ACSBL086)			

Evaluate the effect on biodiversity of using biotechnology in agriculture			
Interpret a range of secondary sources to assess the influence of social, economic and cultural contexts on a range of biotechnologies			
<b>Topic: Infectious Diseases</b>	<b>Do I have it in my notes?</b>	<b>Note-making deadline</b>	<b>Memorising deadline</b>
Describe a variety of infectious diseases caused by pathogens, including microorganisms, macroorganisms and non-cellular pathogens, and collect primary and secondary-sourced data and information relating to disease transmission, including:(ACSBL097, ACSBL098, ACSBL116, ACSBL117)			
Classifying different pathogens that cause disease in plants and animals(ACSBL117)			
Investigating the transmission of a disease during an epidemic			
Design and conduct a practical investigation relating to the microbial testing of water or food samples			
Investigate modes of transmission of infectious diseases, including direct contact, indirect contact and vector transmission			
Investigate the work of Robert Koch and Louis Pasteur, to explain the causes and transmission of infectious diseases, including:			
Koch's postulates			
Pasteur's experiments on microbial contamination			
Assess the causes and effects of diseases on agricultural production, including but not limited to:			
Plant diseases			
Animal diseases			
Compare the adaptations of different pathogens that facilitate their entry into and transmission between hosts(ACSBL118)			

Investigate the response of a named Australian plant to a named pathogen through practical and/or secondary-sourced investigation, for example:			
Fungal pathogens			
Viral pathogens			
Analyse responses to the presence of pathogens by assessing the physical and chemical changes that occur in the host animal's cells and tissues(ACSBL119, ACSBL120, ACSBL121, ACSBL122)			
Investigate and model the innate and adaptive immune systems in the human body(ACSBL119)			
Investigate and analyse the wide range of interrelated factors involved in limiting local, regional and global spread of a named infectious disease			
Investigate procedures that can be employed to prevent the spread of disease, including but not limited to:(ACSBL124)			
Hygiene practices			
Quarantine			
Vaccination, including passive and active immunity(ACSBL100, ACSBL123)			
Public health campaigns			
Use of pesticides			
Genetic engineering			
Investigate and assess the effectiveness of pharmaceuticals as treatment strategies for the control of infectious disease, for example:			
Antivirals			

Antibiotics			
Investigate and evaluate environmental management and quarantine methods used to control an epidemic or pandemic			
Interpret data relating to the incidence and prevalence of infectious disease in populations, for example:			
Mobility of individuals and the portion that are immune or immunised(ACSBL124, ACSBL125)			
Malaria or Dengue Fever in South East Asia			
Evaluate historical, culturally diverse and current strategies to predict and control the spread of disease(ACSBL125)			
Investigate the contemporary application of Aboriginal protocols in the development of particular medicines and biological materials in Australia and how recognition and protection of Indigenous cultural and intellectual property is important, for example:			
Bush medicine			
Smoke bush in Western Australia			
<b>Topic: Non-infectious Disease and Disorder</b>	<b>Do I have it in my notes?</b>	<b>Note-making deadline</b>	<b>Memorising deadline</b>
Construct and interpret negative feedback loops that show homeostasis by using a range of sources, including but not limited to:(ACSBL101, ACSBL110, ACSBL111)			
Temperature(ACSBL098)			
Glucose			
Investigate the various mechanisms used by organisms to maintain their internal environment within tolerance limits, including:			
Trends and patterns in behavioural, structural and physiological adaptations in endotherms that assist in maintaining homeostasis(ACSBL099, ACSBL114)			



Internal coordination systems that allow homeostasis to be maintained, including hormones and neural pathways(ACSBL112, ACSBL113, ACSBL114)			
Mechanisms in plants that allow water balance to be maintained(ACSBL115)			
Investigate the causes and effects of non-infectious diseases in humans, including but not limited to:			
Genetic diseases			
Diseases caused by environmental exposure			
Nutritional diseases			
Cancer			
Collect and represent data to show the incidence, prevalence and mortality rates of non-infectious diseases, for example:			
Nutritional diseases			
Diseases caused by environmental exposure			
Analyse patterns of non-infectious diseases in populations, including their incidence and prevalence, including but not limited to:			
Nutritional diseases			
Diseases caused by environmental exposure			
Investigate the treatment/management, and possible future directions for further research, of a non-infectious disease using an example from one of the non-infectious diseases categories listed above			
Evaluate the method used in an example of an epidemiological study			

## Practice Schedule

PRACTICE EXAM	DEADLINE
Practice Exam 1	
Practice Exam 2	
Practice Exam 3	
Practice Exam 4	
Practice Exam 5	
<b>EXAM DATE:</b>	

### › Congratulations!

*You're ready! Now relax and think about how good it will feel leaving the exam room knowing the hard work has paid off. Congratulations and good luck (not that you need it)!*



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[www.connectededucation.education](http://www.connectededucation.education)

[hello@connectededucation.com.au](mailto:hello@connectededucation.com.au)

1300 667 945