

School administrators, Heads of Learning Area – Science and teachers of Human Biology ATAR Year 12 are requested to note for 2023 the following minor syllabus changes. The syllabus is labelled as 'For teaching from 2023'.

Syllabus changes

The content identified by ~~strikethrough~~ has been deleted from the syllabus and the content identified in *italics* has been revised in the syllabus for teaching from 2023

Unit 3

Science Inquiry Skills

- design investigations, including the procedure(s) to be followed, the materials required, and the type and amount of primary and/or secondary data to be collected; conduct risk assessments; and consider research ethics, ~~including animal ethics~~
- conduct investigations, ~~including the collection of data related to homeostasis and the use of models of disease transmission,~~ safely, competently and methodically for the collection of valid and reliable data
- represent data in meaningful and useful ways, including the use of mean, median, range and probability; organise and analyse data to identify trends, patterns and relationships; discuss the ways in which measurement error, instrumental accuracy, the nature of the procedure and the sample size may influence ~~uncertainty and~~ limitations in data; and select, synthesise and use evidence to make and justify conclusions

Science as a Human Endeavour

- hormones and vaccines ~~can be~~ *are* developed using recombinant DNA *technology* and associated ~~biotechnological techniques~~

Science Understanding

Central and peripheral nervous system

- the parts of the central nervous system, including the brain (cerebrum, cerebellum, medulla oblongata, hypothalamus, corpus callosum) and spinal cord, have specific roles in the co-ordination of body functions and are protected by the *bones of the skull*, the meninges and cerebro-spinal fluid

Unit 4

Science Inquiry Skills

- design investigations, including the procedure(s) to be followed, the materials required, and the type and amount of primary and/or secondary data to be collected; conduct risk assessments; and consider research ethics, ~~including animal ethics~~
- conduct investigations, ~~including the use of virtual or real biotechnical techniques of polymerase chain reactions (PCR), gel electrophoresis for deoxyribonucleic acid (DNA) sequencing, and techniques for relative and absolute dating,~~ safely, competently and methodically for the collection of valid and reliable data
- represent data in meaningful and useful ways, ~~including the use of mean, median, range and probability;~~ organise and analyse data to identify trends, patterns and relationships; discuss the ways in which measurement error, instrumental accuracy, the nature of the procedure and the sample size may influence ~~uncertainty and~~ limitations in data; and select, synthesise and use evidence to make and justify conclusions
- select, use and/or construct appropriate representations, including *diagrams, models and flow charts*, ~~phylogenetic trees,~~ to communicate conceptual understanding, solve problems and make predictions

Science as a Human Endeavour

- developments in biotechnology, for example *polymerase chain reaction (PCR)*, *gel electrophoresis* and *DNA sequencing*, have increased access to genetic information of species, populations and individuals, existing now is in the past, the interpretation and use of which may be open to ethical considerations and provide evidence for evolution (*the process of obtaining a DNA sequence is not required*)
- developments in the fields of ~~comparative genomics~~, comparative biochemistry (*including DNA and protein sequences*) and bioinformatics have enabled identification of further evidence for evolutionary relationships, which help refine existing models and theories

Science Understanding

Gene pools

- the incidence of genetic diseases in particular populations illustrates the effects of different factors on the dynamics of gene pools, including the incidence of Tay-Sachs disease, thalassemia (α and β) and for example sickle-cell anaemia

Evidence for evolution

- ~~biotechnological techniques provide evidence for evolution by using PCR (to amplify minute samples of DNA to testable amounts), bacterial enzymes and gel electrophoresis to facilitate DNA sequencing of genomes~~
- ~~comparative studies of DNA (genomic and mitochondrial), proteins and anatomy, provide additional evidence for evolution; genomic information enables the construction of phylogenetic trees showing evolutionary relationships between groups~~
- *evolutionary relationships between groups can be represented using phylogenetic trees (construction of phylogenetic trees not required)*

Hominid evolutionary trends

- humans as primates are classified in the same taxonomic family as great apes. The species within the *great ape* family are differentiated by DNA nucleotide sequences, which brings about differences in:
 - relative size of cerebral cortex
 - mobility of the digits
 - *stance and locomotion* – adaptations to bipedalism, *brachiation* and quadrupedalism
 - prognathism and dentition
- determining relatedness and possible evolutionary pathways for hominins uses evidence from comparisons of modern humans and the *other* great apes with fossils of:
 - *Australopithecus afarensis*
 - *Australopithecus africanus*
 - *Paranthropus robustus*
 - *Homo habilis*
 - *Homo erectus*
 - *Homo neanderthalensis*
 - *Homo sapiens*