**2019 Year 11 General Human Biology**

**TEXT RESOURCES**

HUMAN PERSPECTIVES 1A1B - **HP1**

HUMAN PERSPECTIVES 2A2B (6th ed) - **HP2**

Human Biology Unit 1 and 2 -**Dot Point**

STAWA BODY WORKS STAGE 2 - **BW**

**Unit 1- Healthy Body**

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| Term/  Week | Curriculum Links | Outcomes | Resources | Assessments |
| Term 1 Week1 | **Investigating Scientifically**   * SIS1 - identify, research and construct questions for investigation; propose hypotheses; and predict possible outcomes * SIS2 - design investigations, including the procedure(s) to be followed, the materials required, and the type and amount of primary and/or [secondary data](http://www.australiancurriculum.edu.au/Glossary?a=SSCSBI&t=Secondary%20data) to be collected; conduct risk assessments; and consider research ethics, including animal ethics * SIS4 – represent data in meaningful and useful ways; organise and analyse data to identify trends, patterns and relationships; qualitatively describe sources of measurement error, and uncertainty and limitations in data; and select, synthesise and use evidence to make and justify conclusions * SIS5 - interpret a range of scientific and media texts, and evaluate processes, claims and conclusions by considering the quality of available evidence; and use reasoning to construct scientific arguments | * Distribute programs, syllabus, assessment outline, discuss expectations, etc. * What is 'Human Biology? And why is it important * Student prior knowledge   - The human body, modern medicine, conditions, issues etc.   * Science Inquiry Skills (SIS)   - Hypothesis, variables (independent, dependent and controlled), inference, observation, prediction, error, bias, ethical, validity and reliability.  Fair testing  Drawing a graph – line and column   * distinguish between discrete and continuous data and then select appropriate forms, variables and scales for constructing graphs * construct and interpret frequency tables and diagrams, pie charts and histograms * describe and compare data sets using mean and median   Writing a scientific report | 1. Scientific Method PPT 2. Mindmap -'What is HB?' 3. Graffiti - 'Why is HB important?'      1. Scientific method PPT and Vocab PPT 2. Science Inquiry Booklet 3. **Textbook Activities:**   HP 1: Chapter RQ's and AYK.  HP 2: Chapter 2 RQ's and AYK. |  |
| Term 1 Weeks 2/3 | **Cell structure and function**   * SU1 - all living things carry out the life processes of respiration, feeding (including digestion and absorption) excretion, movement, reproduction, responding to stimuli and growth * SU2 - The cell theory states that all cells arise from other living cells * SU3 - cells are separated from their surroundings by the cell membrane, which controls the movement of materials into and out of the cell by: * passive processes, including diffusion and osmosis * active processes, including active transport, endocytosis * SU4 - body cells contain specialised structures with specific functions, including nucleus, mitochondria, ribosomes, lysosomes and cytoplasm * SIS6 - Select, construct and use appropriate representations, including labelled diagrams and images of various cells, tissues and organ systems, to communicate conceptual understanding, solve problems and make predictions * SHE3 - The understanding of the human body at the cellular level has been enhanced with the development of the microscope and associated techniques * SU6 - The body has a hierarchical structural organisation of cells, tissues, organs and systems; the functions of the systems are related to life processes | * Life processes (review MRS GREN) * Cells are the basic unit of structure and function of living things. * Basic cell structure/components and their functions [nucleus, nucleolus, cell membrane, cytoplasm, endoplasmic reticulum (smooth and rough), mitochondria, golgi body, vesicles, ribosomes, lysosomes, centrioles] * Draw and label generalised animal cell diagrams. * Cells, tissues, organs and organ   -Differentiate between four tissue types according to structure and function. | 1. Cell requirements PPT 2. **Clips:**   [http://www.youtube.com/watch?v=gFuEo2ccTPA](http://ed.ted.com/lessons/the-wacky-history-of-cell-theory)  Introduction to cells  <http://ed.ted.com/lessons/the-wacky-history-of-cell-theory> Cell theory  <https://www.youtube.com/watch?v=u54bRpbSOgs> Discovery cells   1. Cells and organelles PPT 2. Colour and label worksheet 3. **Online Interactive:**   <http://learn.genetics.utah.edu/content/cells/insideacell/>   1. Cell model/poster/ brochure/shrinkey 2. **Textbook Activities:**   HP1: Chapter 3 RQ's and AYK   1. Cells, tissues, organs, system PPT 2. Use microscopes to view tissue samples and identify differences. |  |
| Term 1  Week 4 | * SU3 - cells are separated from their surroundings by the cell membrane, which controls the movement of materials into and out of the cell by: * passive processes, including diffusion and osmosis * active processes, including active transport, endocytosis | * Passive vs active transport   Diffusion  Osmosis  Carrier-mediated transport  Vesicular transport   * Define homeostasis, metabolism, catabolism & anabolism. | 1. Cell Transport PPT 2. Cell Requirements PPT 3. **Online Interactive:**   <http://www.sheppardsoftware.com/health/anatomy/cell/cell_quiz.htm> Game for functions of cell   1. **Animation:**   <http://www.sumanasinc.com/webcontent/animations/content/diffusion.html>   1. **Practical:**   Gummi Bear osmosis  BW – Activity 9 EGGsperimenting with osmosis pg 60-63   1. **Textbook Information:**   HP2: Pg 27 – 34   1. Chemical Reactions for Life PPT | **Task 1**  **Science Inquiry** Practical and validation – Cells, tissues and microscopes (6%) |
| Term 1 Week 5 | * SU5 - Cellular respiration occurs at different locations within the cell to breakdown compounds aerobically or anaerobically to release useable energy for the cell   - | * Cellular respiration   -Respiration vs. breathing  -Anaerobic vs Aerobic  -Word equation  -ATP as the cells energy carrier | 1. Chemical Reactions for Life PPT 2. **Textbook Information**   HP1: Chapter 4   1. **Textbook Activities:**   HP1: Chapter 4 RQ's and AYK. | **Task 2**  **Science Inquiry**  Investigation and validation - Cell transport (7%) |
| Term 1 Weeks 6/7 | **Respiratory system**   * SU7 - The respiratory system is structured to facilitate the exchange of gases between the external environment and the blood * SU8 - to be efficient, gas exchange surfaces have to have the following characteristics: * large surface area * thin * moist * vascular * SU9 - the mechanics of breathing help to maintain the efficient exchange of gases in the lungs * SU10 - the function of the respiratory system can be compromised by diseases and conditions that reduce the efficiency of gas exchange * SI7 - Communicate to specific audiences, and for specific purposes, using appropriate language, nomenclature, genres and models including scientific reports | * Label diagram of human respiratory system. * Describe structure and functions of nasal cavity, trachea, bronchi, bronchioles, alveoli, pleura and diaphragm * Characteristics of gas exchange surfaces and concentration * Physical mechanics of breathing (inspiration/expiration). | 1. Khan Academy Video and Fill in the Blank 2. Respiratory System PPT 3. Respiratory System Booklet 4. **Clips:**   <http://ed.ted.com/lessons/what-do-the-lungs-do-emma-bryce>   1. **Practical:**   Build model lungs  BW Activity 12 Respiratory Volumes pg 76-80   1. Gas exchange chalk and talk 2. **Animation:** Gas exchange   <http://highered.mheducation.com/sites/0072495855/student_view0/chapter25/animation__gas_exchange_during_respiration.html>   1. **Textbook Activity:**   Dot Point pg 19   1. **Practical:**   BW - Activity 12 'Respiratory Volumes' Pg 76 - 80 |  |
| Term 1 Weeks 8/9 | **Circulatory system**   * SU11 - the circulatory system is structured to facilitate the transport of materials to and from exchange surfaces, including the lungs, digestive system and kidneys, and the cells of the body * SU12 - the structure of the heart facilitates the efficient flow of blood around the body * SU13 - the blood vessels of the circulatory system have specialised structures that provide for efficient distribution and collection of blood around the body * SU14 - the blood is made up of plasma and several types of blood cells, each with particular functions that aid in the * transport of materials, including oxygen, nutrients and waste * defence against pathogens. * SU15 - The function of the circulatory system can be compromised by cardiovascular diseases that reduce the efficiency of transport of materials around the body * SIS3 - conduct investigations, including monitoring body functions; use microscopy techniques; and perform real or virtual dissection, safely, competently and methodically for the collection of valid and reliable data * SHS1 - lifestyle choices, including type of diet, can compromise body functioning in the short term and may have long term consequences * SHS2 - treatment of conditions due to system or organ dysfunction has changed through improvements in early diagnosis and appropriate use of drugs, physical therapy, radiation therapy, and removal and/or replacement of affected parts * SI1 - Identify, research and construct questions for investigation; propose hypotheses; and predict possible outcomes * SI2 - Design investigations, including the procedure(s) to be followed, the materials required, and the type and amount of primary and/or [secondary data](http://www.australiancurriculum.edu.au/Glossary?a=SSCSBI&t=Secondary%20data) to be collected; conduct risk assessments; and consider research ethics, including animal ethics * SI3 - Conduct investigations, including monitoring body functions; use microscopy techniques; and perform real or virtual dissection, safely, competently and methodically for the collection of valid and reliable data * SI4 - Represent data in meaningful and useful ways; organise and analyse data to identify trends, patterns and relationships; qualitatively describe sources of measurement error, and uncertainty and limitations in data; and select, synthesise and use evidence to make and justify conclusions * SI5 - Interpret a range of scientific and media texts, and evaluate processes, claims and conclusions by considering the quality of available evidence; and use reasoning to construct scientific arguments * SI7 - Communicate to specific audiences, and for specific purposes, using appropriate language, nomenclature, genres and models including scientific reports | * Functions of circulatory system      * Blood vessels - structure and function of arteries, veins & capillaries * Blood - functions of blood and identify components that make up blood.      * Compare structure and function of RBC's, WBC's and platelets. * Heart - structure and function      * Cardiac Output (define, measure, factors affecting). * Cardiovascular diseases * Discuss impact of diet, exercise, smoking and alcohol on cardiovascular system | 1. Circulatory system PPT 2. Chalk and talk the Heart 3. Heart as double dump worksheet 4. Heart blood flow colouring and labelling worksheet 5. Cardiac Output PPT 6. **Practical:**   BW - Activity 15 'Blood vessels and blood flow' Pg 95 – 100   1. **Practical:***Heart Dissection* 2. Blood Prezi   <https://prezi.com/eqjysvditqxb/blood-components/>   1. **Practical:**   Blood Slide under Microscopes  Blood in a bottle model   1. **Textbook Information:**   HP2: Pg 74-78   1. **Textbook Activities:**   BW - Activity 17 'Cardiovascular disease' Pg 106 - 117 | **Task 3**  **Science Inquiry**  Investigation and validation – Exercise and heart rate (7%) |
| Term 1  Week 10  Term 2  Week 1 | **Digestive system**   * SU16 - The structure of the digestive system facilitates the breakdown of food to compounds that can be readily absorbed into the blood for use in the cells * SU17 - Mechanical digestion, including the teeth and peristalsis is required to reduce the size of food pieces and to increase the surface area on which chemical digestion can act. * SU18 - Chemical digestion involves the use of enzymes (amylase, protease and lipase) to chemically break down food for absorption. * SU19 - materials eliminated from the digestive system include indigestible contents, excess materials and some metabolic wastes * SU20 - the function of the digestive system can be compromised by diseases and conditions that reduce the efficiency of digestion or absorption of food * SHS1 - lifestyle choices, including type of diet, can compromise body functioning in the short term and may have long term consequences * SHS2 - treatment of conditions due to system or organ dysfunction has changed through improvements in early diagnosis and appropriate use of drugs, physical therapy, radiation therapy, and removal and/or replacement of affected parts * SI7 - Communicate to specific audiences, and for specific purposes, using appropriate language, nomenclature, genres and models including scientific reports | * Structure and functions of digestive system * Label diagram of human digestive system. * Mechanical vs Chemical digestion * Major digestive enzymes (amylase, lipase, protease) * Conditions of the digestive system | 1. Digestion PPT 2. **Textbook information:**   HP1: Pg 46 – 54  HP2: Pg 87 – 96   1. **Textbook Activities:**   HP2: RQ and AYK page 97     1. Digestive system simulation lab stations 2. Flash cards 3. Kahoot 4. Digestion PPT Recap 5. Digestion Conditions Web Quest 6. **Practical:**   *Task 5: HP1 - Act 5.3 'A digestive enzyme' Pg 61 – 62* | **Task 4: Test** Respiratory and Circulatory System (10%) |
| Term 2  Weeks 2/3 | **Diet and nutrition**   * SU21 - A healthy diet contains the right balance of foods to provide the correct amount of energy and materials for cellular function; malnutrition occurs if a diet is not balanced and this may lead to a person being overweight or underweight * SU22 - The uses of the main nutrient groups required in a healthy diet are * carbohydrates: used as an energy source, for storage and for fibre/roughage * proteins: used for growth and repair of tissues and as components of cell structures, hormones and enzymes * fats (lipids): used in the formation of cell membranes, as an energy source and a storage material, * vitamins and minerals, including calcium and iron, used in many various roles * water, the main solvent in the body, which also has many other uses in the body * SHS1 - lifestyle choices, including type of diet, can compromise body functioning in the short term and may have long term consequences * SHS2 - treatment of conditions due to system or organ dysfunction has changed through improvements in early diagnosis and appropriate use of drugs, physical therapy, radiation therapy, and removal and/or replacement of affected parts * SI7 - Communicate to specific audiences, and for specific purposes, using appropriate language, nomenclature, genres and models including scientific reports | * Define- nutrition, nutrients, diet, essential nutrients, malnutrition. * Main nutrient groups (name, sources and uses) - carbohydrates, proteins, fats, water, vitamins and minerals. * What is a 'balanced diet? | * **Clips:**   'How sugar affects our brain'  <http://ed.ted.com/lessons/how-sugar-affects-the-brain-nicole-avena>  'Vitamins'  <http://ed.ted.com/lessons/what-s-the-value-of-vitamins-ginnie-trinh-nguye>   * **Practical:**   Testing foods for nutrients (starch, glucose, protein, fats)   * **Textbook Activities:**   Dot point Pg 16  BW - Activity 22 'Healthy eating and eating disorders' Pg138 - 149   * Nutrition advertisement - video / flyer | **Task 5 Extended response** – Nutrition and digestion research (10%) |
| Term 2 Weeks 4/5 | * SU23 - The urinary system facilitates the removal of toxic nitrogenous wastes and excess water from the blood * SU24 - The urinary system works with other systems and organs, including the digestive system, the skin and lungs, to maintain the correct water balance within the body * SU25 - Dysfunction of the kidneys may result in death due to accumulation of toxic substances in the blood; treatment using dialysis machines or kidney transplants help to preserve life * SHS1 - lifestyle choices, including type of diet, can compromise body functioning in the short term and may have long term consequences * SHS2 - treatment of conditions due to system or organ dysfunction has changed through improvements in early diagnosis and appropriate use of drugs, physical therapy, radiation therapy, and removal and/or replacement of affected parts | * Urinary system - structure and function * Kidneys - structure (macroscopic) * Urine - composition / factors affecting composition * Lifestyle effects on kidney function * Kidney failure * Dialysis * Kidney transplant | 1. Urinary Systems PPT 2. **Textbook Information**   HP2: Pg 100 – 109   1. **Textbook Activities:**   HP2: RQ and AYK Pg 110  HP2 - Activity 'Urine production/urine analysis' Pg 109   1. **Practical**   BW - Activity 31 ‘Kidney dissection’ Pg 193  Plasticine/playdough kidney models   1. **Clips:**   BBC 'Don't die young - kidneys'  Printing a kidney  <http://www.ted.com/talks/anthony_atala_printing_a_human_kidney>   1. Peer teaching/triads - kidney failure 2. Alphabet brainstorm, flash cards and mind maps |  |
| Term 2  Week 6 |  |  |  | **Task 6: Test** Digestive and urinary systems (10%) |