**Year 8 Biological Science Program 2018**

**Science Understanding for Biological Sciences**

***Cells are the basic units of living things and have specialised structures and functions.***

***Elaborations:***

* examining a variety of cells using a light microscope, by digital technology or by viewing a simulation
* distinguishing plant cells from animal or fungal cells
* identifying structures within cells and describing their function
* recognising that some organisms consist of a single cell
* recognising that cells reproduce via cell division
* describing mitosis as cell division for growth and repair

***Multi-cellular organisms contain*** [***systems***](http://www.australiancurriculum.edu.au/Glossary?a=S&t=systems) ***of organs that carry out specialised functions that enable them to survive and reproduce.***

***Elaborations:***

* identifying the organs and overall function of a system of a multicellular organism in supporting the life processes
* describing the structure of each organ in a system and relating its function to the overall function of the system
* examining the specialised cells and tissues involved in structure and function of particular organs
* comparing similar systems in different organisms such as digestive systems in herbivores and carnivores, respiratory systems in fish and mammals
* distinguishing between asexual and sexual reproduction
* comparing reproductive systems of organisms

**Science as a Human endeavor**

1. considering how advances in technology, combined with scientific understanding of the functioning of body systems, has enabled medical science to replace or repair organs

**Assessment Outline**

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| **Item** | **Weighting** | **Date** |
| Quiz | 10% | 19 October |
| Mid Topic Test | 40% | 9 November |
| Research task: Animal Comparison | 10% | Out 19 Oct  Due 2 Nov |
| Investigation | Contributes towards Investigation grade | 8 |
| Final Topic Test | 40% | 9 |

**Program**

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| **Week of Program/**  **Term** | **Outcomes** | **Activities**   * **Worksheet on Shared Drive** * **Experiment on Shared Drive** * **Pearson Chapter Questions** * **Pearson Experiment** | **Assessments** |
| 1  (Wk 10 17-21 Sept) | * Recall that cells are the basic units of living things * Recall the parts of a light microscope * Calculate the magnification of a microscope   = *ocular x objective magnification*   * Define the field of view of a microscope * Use a light microscope to examine a variety of cells | **Year 8 Pearson - Chap 2, pg. 39**  **Microscope activity pg. 46**  **Preparing an met mount – onion slide**  <https://www.brainpop.com/games/virtuallabsusingthemicroscope/>  [http://det.wa.edu.au/det-learning-resources/viewLearningResource/[28169]33459/index.html](http://det.wa.edu.au/det-learning-resources/viewLearningResource/%5b28169%5d33459/index.html) Interactive using microscopes  <http://learn.genetics.utah.edu/content/begin/cells/scale/>  Shows cell size and scale - nice! |  |
| 2  (Wk 1 9-12 Oct) | * Distinguish plant cells from animal cells or fungal cells * Identify the main structures within cells and describe their functions *(nucleus, cell membrane, cytoplasm, ribosomes. Mitochondria, chloroplast)* * recognising that some organisms consist of a single cell * Recall some examples of specialised animal and plant cells * Recognise that cells reproduce via cell division *(mitosis only)* * Describe the purposes of Mitosis | **Year 8 Pearson - Chap 2.2, pg. 48**  <http://www.kscience.co.uk/animations/plant_cell.swf>  **Year 8 Pearson – Chap 2.3, pg. 57**  **Looking at Pond water pg. 63**  **Organelle flash card templates**  <http://www.cellsalive.com/mitosis.htm> - animation of mitosis  **Clickview Mitosis**  [**https://online.clickview.com.au/share/embed?shareCode=4e03dc15&a=false**](https://online.clickview.com.au/share/embed?shareCode=4e03dc15&a=false) |  |
| 3  (Wk 2 15-19 Oct) | * Understand that multicellular organisms have an organised hierarchy:   + Cells 🡪 tissues 🡪 organs 🡪 systems * Examining the specialised cells and tissues involved in the structure and function of particular organs; * Recall the main organs in the digestive system | **Year 8 Pearson – Chap 2.4, pg. 65**  **Where in my body. Pg. 72**  **Year 8 Pearson – Chap 3.1, pg. 79**  **CLICKVIEW** | **Quiz**  **Friday 19th Oct**  ***Hand out Research Task*** |
| 4  (Wk 3 22-26 Oct) | * Recall the main organs in the digestive system * Describe the structure of these organs, relating their functions to the overall function of the system * Compare the digestive system in different organisms (herbivores and carnivores) | **NOTE: students only need to label and describe basic organs of these next 3 systems** |  |
| 5  (Wk 4 29 Oct – 2 Nov) | * Recall the main organs in the respiratory system * Describe the structure of these organs, relating their functions to the overall function of the system * Compare the respiratory system in different organisms (respiratory system in fish and mammals) | **Year 8 Pearson – Chap 3.2, pg. 89**  **Fish gills dissection (previous)**  **Measuring lung capacity:** http://www.biologycorner.com/worksheets/lungcapacity.html CLICKVIEW Plants - Roots, Leaf Function and Respiration (only respiration chapter) | **Research Task Due**  **Friday 2nd Nov** |
| 6  (Wk 5 5-9 Nov) | * Recall the main organs in the cardiovascular system * Describe the structure of these organs, relating their functions to the overall function of the system * Can name chambers of heart, blood vessels attached to heart and order of blood flow * Summarise how the three systems (digestion, respiratory and cardiovascular) are related and important in terms of survival:   + *Glucose, Oxygen (respiration)🡪 ATP*   + *Transport to cells* | **Year 8 Pearson – Chap 3.3, pg. 99**  **Clickview – Anatomy: Functional body systems (chapter 5 and 6; worksheet on shared drive)**  **Heart dissection, pg. 106** | **Mid Topic Test Friday 9th Nov** |
| 7  (Wk 6 12-16 Nov) | * Distinguish between sexual and asexual Reproduction * Recall the types of asexual reproduction * Define the terms: Life cycle, development, growth, metamorphosis, fertilisation, copulation, parental care * Be able to label a life cycle (incomplete vs. complete) * Be able to label the reproduction parts of a flowering plant * Describe the process of pollination | **Year 8 Pearson – Chap 4.1 and 4.2**  **Flower dissection (previous)**  **NOTE: students will not be doing, Chap 4.3 & 4.4** |  |
| 8  (Wk 7 19-23 Nov) | ***Pulse Rate & Exercise (INVESTIGATION)*** | Investigation Week | **Investigation – Friday 23rd Nov** |
| 9  (Wk 8 26-30 Nov) |  | Revise and Test Week | **Final Topic Test Friday 30th Nov** |