**Year 11 Biology Unit 1: Unity and Diversity**

## Student Texts

Year 11 Biology (2010) Student Resource and Activity Manual (BIOZONE) and answer booklet.

## Area of Study One: Cells in Action

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| Dot Point | Student Manual  (PowerPoint Presentations) | Suggested Practical Activities |
| 1. Cell Structure: prokaryotic and eukaryotic cells at the light and electron microscope levels; cellular organisation | Student Manual 39-40, 70-72, 75-78, 85-86.  *PowerPoint (Cells)* | Investigating Cells |
| 2. Cell Functioning: specialised parts of cells and their functions. | Student Manual 79-84, 103-104 | **SAC 1- Assessment of practical activity (Investigating Cells)** |
| 2. General role of enzymes in biochemical activities of cells | Student Manual 66 | Demonstration of liver enzyme, catalase, on hydrogen peroxide. |
| 2. Biochemical processes including photosynthesis and cellular respiration in terms of inputs and outputs. | Student Manual 110, 112-113.  *PowerPoints (Respiration/Photosynthesis)* | Starch Picture Demonstration  Making Ginger Beer/Yeast Balloon  Demonstration |
| 3. Composition of cells: major groups of organic and inorganic substances including carbohydrates, proteins, lipids, nucleic acids, water minerals, vitamins; their general role in cell structure and function. | Student Manual 60-65 |  |
| 4. Internal and external environments of cells; plasma membranes. | Student Manual 88-90  *PowerPoint (Movement Across Membranes)* |  |
| 4. Membrane transport including diffusion, osmosis, active transport, surface area to volume ratio. | Student Manual 91-94, 98  *PowerPoint (Diffusion, Osmosis, Active Transport)*  *PowerPoint (Surface Area/Volume (examples))* | Movement of Materials across a Membrane  **SAC 2- Investigation of Cell Membranes.** |
| 5. Cell replication: purposes of cell replication (mitosis and cytokinesis); cell growth, cell size and cell division. | Student Manual 99-102  *PowerPoint (Cell Replication)* | Worksheet: Surface Area/Volume Ratio |
| **Topic Test on Area of Study One** | | |

## Area of Study Two: Functioning Organisms

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| Dot Point | Student Manual  (PowerPoint Presentations) | Suggested Practical Activities |
| 1. Obtaining nutrients: organic and inorganic requirements; autotrophs; heterotrophs.  Obtaining energy: inputs and outputs of photosynthesis. Structural features of photosynthetic organisms.  Processing nutrients: features and examples of different systems in animals | Student manual 112-114, 117-118, 120-124, 127-135.  *PowerPoint (Nutrition 2007)*  *PowerPoint (Mammal Skulls)* | Skulls Prac  Termite Prac  Article on digestion in ring-tailed possums  **SAC 3-Termites, Skulls and Guts.** |
| 1. Distributing materials: Features and examples of transport systems in multicellular organisms | Student manual 159-163, 156, 164-173 | Observation of xylem and phloem in celery  Heart Dissection  Observation of blood smear  Demonstration of blood flow in fish tail |
| 1. Removing wastes: nature of waste products and toxic substances and excretory systems in plants and animals | Student Manual 155, 176, 179-180, 177-178. | Kidney Dissection |
| 1. Exchanging Gases: features of gaseous exchange surfaces and mechanisms of gas exchange in animals and plants | Student Manual 140-146, 150-153 | Lung Dissection  Inflating a lung  Demonstration of lung tissue floating  Making a model lung |
| 2. Reproduction: asexual and sexual reproduction. Examples of reproduction in unicelleular and multicellular organisms | Student manual 186, 189-201  *PowerPoint (Reproduction)*  *PowerPoint (Flower Structure)* | Dissection of flower  Dissection of fruits  Germination of pollen grains  Germination and caring for a seedling |
| 3. Classification: purposes, principles, hierarchy of biological classification.  Features of major taxonomic groups | Student Manual 217-224, 227-231  *PowerPoint (Classification of Organisms)* | Insect Collection. Could be another SAC. |
| **SEMESTER EXAMINATION** | | |