



## Biological Sciences (Year 9)- 2012

### Year 9 Level Description

In Year 9, students consider the operation of systems at a range of scales. They explore ways in which the human body as a system responds to its external environment and the interdependencies between biotic and abiotic components of ecosystems.

### Content Description:

1. Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment.

### Elaborations

1. Cells are organized into groups (tissues) which perform specific functions.
2. Cells have specific organelles for specific functions
3. Respiration (in all animals and plants) and photosynthesis (in green plants) are processes that sustain life.
4. Respiration equation: food + oxygen  $\rightarrow$  energy + water + carbon dioxide
5. Photosynthesis equation: sun's energy + carbon dioxide + water  $\rightarrow$  food + oxygen
6. Organisms have organs which make up systems (*e.g. lungs and trachea are organs that are part of the respiratory system*).
7. Body systems perform life-sustaining functions (*e.g. the respiratory, circulatory, digestive and excretory systems*).
8. Explore how complex organisms depend on interacting body systems to meet their needs (*e.g. the circulatory system carries nutrients from the digestive system to the cells*).

### Content Description:

1. Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems.

### Elaborations

1. Interdependence and balance between living (biotic) and non-living or physical (abiotic) aspects of ecosystems (*e.g trees produce oxygen and provide shade and habitat*).
2. Energy flows through a food chain and some is wasted as heat.
3. Relationships in food chains can be represented by pyramids, biomass decreases towards the top of the pyramid due to the loss of energy as it flows through the food chain.
4. Matter is cycled through the ecosystems.

**Assessments:**

<b>Assessment</b>	<b>Value %</b>
Research Task	20
Test 1: Human Body	25
Investigation	20
Test 2: Ecology	25
Homework	10

A detailed breakdown of the programme can be found on the College website in the Science Learning Area.