**Introduction to Biology Unit Outline**

For each of these systems you will need to cover:

* What does this body system do? ie. The function of the body system.
* Why is this body system important?
* What parts/organs make up this body system?
* What do these parts look like? ie. Their structure - size and shape.
* How does this structure help them to do their job?

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| Topics | SUGGESTED TIME ALLOWANCE (PERIOD) | Curriculum Content | Resources – Experiments, Practicals and DVDs |
| Cells – Plant & Animal Cells | 6 | \*Cell Organelles – Mitochondria, Chloroplasts, Ribosomes, Nucleus, Nucleolus, Golgi Body, Endoplasmic Reticulum  \*Cell membrane/Cell wall  \*Photosynthesis  \*Respiration  \*Difference between plant and animal cells | \*Microscope work  \* Lots of DVD’s/Video  \* Cell membranes – Salt vs Distilled  \* Cell Model |
| Movement through Cells | 3 | Diffusion  Osmosis  Active Transport | \*Dialysis Tubing – starch / glucose / iodine  \* Air fresheners |
| Plants – Flowering Plants | 6 | Structure of a flowering plant  Structure of a flower  Transport in plants -Xylem and Phloem vessels  Pollination and Seed dispersal | \* Flower dissection  \* Microscope Work – pollen  \*Poster – seed dispersal  \* Celery and dye |
| Plant – Non Flowering | 1 | Classification - What are the  non-flowering plants? | \*DVD Life of Plants |
| Assignment | 2 | Plant Collection | \*Herbarium Collection |
| Bones | 3 | Human Skeleton  Bone and bone marrow microscope work  Levers | Refer to the TEACHER’S DRIVE, SCIENCE FOLDER, HUMAN BIOLOGY FOLDER, then SKELETAL SYSTEM FOLDER.  \* Long Bone dissection |
| Muscles | 2 | Types of muscles  How muscles work | \*Chicken wing dissection  \*Video 21: Movement Systems |
| Heart & Blood | 3 |  | Refer to the TEACHER’S DRIVE, SCIENCE FOLDER, HUMAN BIOLOGY FOLDER, then CIRCULATORY SYSTEM FOLDER.  \* Heart dissection  \*Video: Dissection of a Mammalian Heart  \*Microscope Work – prepared blood slides |
| Lungs | 2 |  | Refer to the TEACHER’S DRIVE, SCIENCE FOLDER, HUMAN BIOLOGY FOLDER, then RESPIRATORY SYSTEM FOLDER.  \* Exercise Practical – heart and breathing rate  \*Demonstration – a pluck  \*Video 19: Scientific Eye - Respiration |
| Kidney | 2 | Kidney dissection | Refer to the TEACHER’S DRIVE, SCIENCE FOLDER, HUMAN BIOLOGY FOLDER, then EXCRETORY SYSTEM FOLDER. |
| Guts | 2 | Model – Human Digestive System  DVD (See TL): The Digestive System | Refer to the TEACHER’S DRIVE, SCIENCE FOLDER, HUMAN BIOLOGY FOLDER, then DIGESTIVE SYSTEM FOLDER. |
| Summary | 2 | Rat Dissection  Video 21: Control of Systems |  |
| Ecosystems | 4 | Habitats, environment, niche. Population measurements eg. Tag & Return, Direct Census.  Specimen collections eg. Invertebrates  Jar Ecosystem |  |
| Adaptations | 2 | Sea Monkeys  Structural, Behavioural and Physiological adaptations of plant and animals |  |
| Feeding Relationships | 3 | Food Chains and Food Webs  Predator/Prey  Parasites |  |
| Environmental Issues | 4 | Global Warming  Population explosion  Habitat loss/management |  |
| Assignments, Unit test | 3 |  |  |

Suggested Topic Breakdown

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| Topic 1. | Period | Content |
| Plant & Animal Cells | 1 | Basic Cell Structure, membranes, cytosol, nucleus  How are Plant & Animal Cells different? Cell walls  Basic microscopy and looking at prepared slides and scientific drawings |
| 2 | Cell membranes & cell walls  Phospholipid membrane structure  Cellulose and importance in plants |
| 3 | Nucleus & Basic DNA  Chromosomes & Genes  Activities: Karyotyping activity  Onion root tip prepared slides/root tip preparation  Basic DNA Structure |
| 4 | Mitochondria & respiration  Importance of respiration  Basic equations  Basic structure of Mitochondria |
| 5 | Chloroplasts & photosynthesis  Importance of Respiration  Basic Equations  Basic structure of chloroplasts |
| 6 | Golgi, ER and ribosomes  Protein factory model of cell  Production, transport and export of proteins |

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| Topic 2. | Period | Content |
| Movement through cells | 1 | Introduction to diffusion eg. Blind folded atoms(students) and Diffusion of dye in water  Atomic movement principles  Concentrations gradients |
| 2 | Introduction to osmosis  Differentially permeable membranes  Experiment: Dialysis tube using starch solution & iodine.  Passive verses Active transport |
| 3 | Test on Topics 1 & 2 |

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| Topic 3 | Period | Content |
| Plants - Flowering | 1 | Introduction to plant reproduction. Flowering vs non-flowering.  Introduction to flower structure  Introductory Video: Secret life of Plants |
|  | 2 | Flower dissection of a variety of flowers  Sexing flowers, male female or both  Stereo microscope examination of flower parts |
|  | 3 | Introduction to pollen pollination.  Types of flowers verses pollination method  Video: Secret life of Plants |
|  | 4 | Seed dispersal  Poster of plants with different methods collected in field. |
|  | 5 | Introduction to transport in plants  Set up celery prac |
|  | 6 | Round up on celery prac results  Catch up/summary |

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| Topic 4 | Period | Content |
| Non flowering Plants | 1 | Theory about non flowering plants  Video Secret life of Plants (different episodes)  Start plant collections |

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| Topic 5 | Period | Content |
|  | 1 | Collection and pressing of plant specimens  Plant identification  Assembly of poster |
|  | 2 | Completion of posters |
|  | 3 | Test on Topic 3, 4 & 5 |

\*Note: Many students will have covered the content in the table below in the Human Biology Unit (pre-2012) so you may need to skip the next 14 lessons or cover them very briefly eg. One period each. Do not panic there is plenty more coming up to keep them busy :-)

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| Topic 6 | Period | Content |
| Skeletal System | 1 |  |
| 2 |  |
| 3 |  |
| Muscular System | 1 |  |
| 2 |  |
| Circulatory System | 1 |  |
| 2 |  |
| 3 |  |
| Respiratory System | 1 |  |
| 2 |  |
| Excretory System | 1 |  |
| 2 |  |
| Digestive System | 1 |  |
| 2 |  |

\* Note: Start again here if you skipped the last 14 lessons :-)

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| Topic 7. | Period | Content |
| Ecosystems | 1 | \*\*\* Set up Sea Monkey practical \*\*\*  Introduction to Ecology, Environment, Niches and Ecosystems – inputs/outputs = Balance  Biosphere video on YouTube  ClickView has great videos too. |
| 2 | Notes on Direct Census  Activity: Direct Census on Trees at GSC |
| 3 | Graph Results of Direct Census on Trees  Notes on Tag & Return  Activity: Day 1 Tag & Return eg. Snails |
| 4 | Activity: Day 2 Tag & Return  Calculations  Activity Demonstration: Use of Quadrats |
| Adaptations | 1 | Notes on 3 types of adaptations  Video: Any David Attenborough dvd |
| 2 | Assessment: Create an Organism from a different Planet! Students to focus on its adaptations |
| Feeding Relationships | 1 | Introduction notes on Feeding Relationships – Food Chains/Webs/Pyramids  Internet activity – Food Chains |
| 2 | Activity: Creek to collect specimens, then to suggest possible feeding relationships |
| 3 | Complete Lesson 1 activity  Web of life cut and paste exercise on Feeding Relationships |
| 4 | Video: Food Chains (See TL)  Puzzle Sheet: the Food Chain Game (See TL) |
| Environmental Issues | 1 | Activity: Effect of Human Activity on Plant Growth eg. Seedlings tested with various concentrations of Salt, Detergent, Smoke, etc  Monitor progress over next two weeks. |
| 2 | Greenhouse Effect  Dvd: Saving Heiroyonomous (Boy and his turtle) |
| 3 | Notes/research on Habitat Loss & Deforestation  Video??? |
| 4 | Human Population Issues  Video: Population Explosion or How Many People can Earth Support |
| Assignments/ Test | 1 | Assessment on an Experiment Eg. Effect of Human Activity on Plant Growth or any other practical you may like to do |
| 2 | Assessment using IT and Netbooks eg. Local ecosystem; Survey on Environmental Issues; |
| 3 | Test on Topic 7. |