**Year 11 Biology - Unit Two: Organisms and their Environment**

**Area of Study 1- Adaptations of Organisms**

***Outcome 1. Explain and analyse the relationship between environmental factors, and adaptations and distribution of living things.***

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| Week | KeyKnowledge | Lessons | ***Biozone***/Text Reading and Q’s |  |
| (2Lessons) | Classification: purposes, principles, hierarchy of biological classification.  Features of major taxonomic groups | Classification of Living Things -PPT   1. Define Classification – what do you remember. 2. New Classification System  * Read p 210 and discuss in small groups. Answer questions 1and 2 . Give feedback in large group.  1. Taxonomic System  * Define binomial * Naming of species * levels of Classification * Classification keys pp225 and 227  1. The 5 kingdoms  * Concept map work * Use pages 213-217 * Ch 12 of Heinemann text * PowerPoint * Homweork - Complete pp218 as summary  1. Other  * pp219-224 * Snake key * Animal worksheet | Chapter 12 pp216-236  ***The new tree of life - p 210***  ***Classification keys- pp225 and 227***  ***Features of taxonomic groups - pages 213-217***  ***pp219-224*** |  |

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| **Outcome 1** On completion of this unit the student should be able to explain and analyse the relationship between environmental factors, and adaptations and distribution of living things.  *Key knowledge* This knowledge includes;  • environmental factors: biotic and abiotic factors; availability of resources;  • structural adaptations: relating major features of organisms to survival value;  • physiological adaptations  – tolerance range of organisms; maintaining equilibrium by detecting and responding to changes in environmental condition  – nerve control in complex multicellular organisms: major sense organs and pathways of transmission of nerve impulses  – hormonal control in complex multicellular organisms  – regulating water balance and controlling temperature;  • plant tropisms: growth responses, rhythmic activities;  • behavioural adaptations: individual and group behaviours of animals including rhythmic activities, feeding behaviours; communication; social and territorial behaviours;  • reproductive adaptations: systems and strategies; development and life cycles;  • techniques used to monitor environmental change and species distribution. | | | | | |
|  | KeyKnowledge/  Learning outcomes | Learning Strategies | ***Biozone***/Text Reading and Q’s | **Other resources** |
|  | Structural adaptations:   * relating major features of organisms to survival value;   Physiological adaptations   * tolerance range of organisms maintaining equilibrium by detecting and responding to changes in environmental condition | * Understand Habitat   + Tolerance Range * Adaptations   + Define structural, physiological and behavioural adaptations   + Give examples  1. Review what classification is about. 2. Asking questions   What animal am I? Identify what you have on back by asking questions. Questions can only be yes and no. What type of questions did you ask? Which type of questions where they.  Where do I live? What questions do you ask. Descriptive terms about environment. Do snake example  How am I adapted to live in this habitat i.e. snake in rocky desert habitat   1. Define habitat and adaptation (PowerPoint)  * Define structural, physiological and behavioural adaptations * Video on DVC – The Life of mammal – Episode 8-Life In a Tree   + Write down structural adaptations in animals on worksheets * Homework p243 and 253 | ***Habitat p 243***  ***Dingo Habitats p 245***  ***Ecological niche p 244***  ***P253Animal adaptations*** |  |
|  | Structural adaptations:   * relating major features of organisms to survival value;   **Unit 1 Outcome 2** On completion of this unit the student should be able to describe and explain the relationship between features and requirements of functioning organisms and how these are used to construct taxonomic systems.  *Key knowledge*   * distributing materials: features of effective transport systems; examples of transport systems in multicellular organisms | Lesson 2  Review structural adaptations in animal.   * Why am I game- Ask questions about factors related to structural adaptations only answer if a structural adaptation e.g. Do I have a long tail for balance? Do I have eyen on the front of my head so us to judge distance when I swing from trees.   Structural adaptations in plants   * List plant adaptations on worksheet from the clip <http://www.youtube.com/watch?v=fA4rpATxaHU&feature=PlayList&p=8FB6EAFEAF424CDC&playnext_from=PL&index=0&playnext=1>   Plant Transport activity (laptops)  Worksheet on wiki at <http://vce-unit1and2biology.wikispaces.com/Plants> | Chapter 13  ***Complete Xylem and phloemp144***  ***Complete transpiration and 145 and 146***  ***Complete translocation p 147*** |  |
|  | Structural adaptations:   * relating major features of organisms to survival value; | Lesson 3  Structural adaptations in angiosperm leaves   * Review leaf structure * Investigate definition and example of hydrophyte, mesophyte, Xerophyte * No slides of halophyte * see wiki http://vce-unit1and2biology.wikispaces.com/Plant for some help and Ch 13   Prac need slides Draw or make labelled diagrams. Use large microscope and overhead projector  Prac on Environmental adaptations in angiosperm leaves   * Hydrophyte- adapted to living either partially or fully submerged in water e.g. watrerlilies * Mesophyte- terrestrial plants which are adapted to neither a dry nor particularly wet environment e.g. clover, daisy * Xerophytes – adapted to dry conditions e.g. cacti, bromeliads * Halophyte – adapted to conditions high in salinity either in the root area or salty spray e.g. mangroves   Could create poster | ***Mesophytes - Review leaf Structure p99***  ***Hydrophytes 278 Adaptations of Hydrophytes.***  ***Xerophytes 275-276 Adaptations of Xerophytes.***  ***Halophytes - 277 Mangrove Adaptations.***  ***279-280. Plant Adaptations to Fire.*** | **Plants (Structure, transport and xerophytic adaptations**  <http://www.youtube.com/watch?v=9A5zDjQ06Hs&feature=related>  <http://www.youtube.com/watch?v=-PJBBowRO0w&feature=related>  Chapter 13 |
|  | Holiday Homework | 1. Glossary – put these words in a glossary p261. Also include  * niche * hydrophyte * physiological adaptations * Structural adaptations * behavioural adaptations * factors * aclimitisation  1. Read over Chapter 13 to review work done so far  * Read Pages 243-260 and answer questions * Chapter Review Questions  1. Ensure all following Biozone are complete 2. Extra work  * Dingo Habitats p 245 * P244 Ecological Niche  1. Create a mind map including work we have done so far | Chapter 13 Text Book  Read over Chapter 13 to review work done so far   * Read Pages 243-260 * Answer following questions   + Questions 1-3. Page 245   + Questions 4-7. Page 251   + Questions 8-11 Page 258   + Questions 12-14. Page 260   ***Habitat p 243***  ***P253Animal adaptations***  ***Parts of leaf p99***  ***Complete Xylem and phloemp144***  ***Complete transpiration and 145 and 146***  ***Complete translocation p 147***  ***Mesophytes - Review leaf Structure p99***  ***Hydrophytes 278 Adaptations of Hydrophytes.***  ***Xerophytes 275-276 Adaptations of Xerophytes.***  ***Halophytes - 277 Mangrove Adaptations.***  ***279-280. Plant Adaptations to Fire.***  ***Dingo Habitats p 245***  ***P244 Ecological Niche*** |  |
|  | Physiological Adaptations:   * tolerance range of organisms, maintaining equilibrium and responding to changes in environmental conditions. * regulating water balance and controlling temperature | 1. Review Structural adaptations with the Adaptation Game created by LC 2. Case Study – Camels (note taking)  * First view powerpoint and identify the Family (Camelidae) Genus (Cameuls) Species Bactrian and dromedary   + all originated in north America   + Dromedary-arabian one humped camel   + Bactrian – Asian 2 humped camel * Read handout to themselves. Outline adaptations.(on note sheet) * Go over physiological adaptations in detail. * identify adaptations(up to5) that are   + physiological   + structural   + behavioural * Biozone pp257-258 and 259 | ***257-258. Control of Body Temperature.***  ***259. Thermoregulation in Mammals.***  Extra  ***260. Water Balance in desert mammals***  ***261 managing Fluid balance on land***  Chapter 16, Pages 299-315  Questions 1-2, 4. Page 302  Questions 6-9. Page 308  Questions 14-15. Page 315 | H/O on Camel adaptations |
|  | Physiological Adaptations:   * tolerance range of organisms, maintaining equilibrium and responding to changes in environmental conditions.   – hormonal control in complex multicellular organisms | 1. Hormonal control Introductions  * Animal hormone PowerPoint  1. **Biozone examples** | ***P205 Growth and development***  ***P206Sexual development***  ***P207 Ageing***  ***Extra***  ***P197 Control of menstrual Cycle leave this to when discussing negative feedback)***  ***P201 The hormones of pregnancy*** |  |

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|  | Physiological Adaptations:   * tolerance range of organisms, maintaining equilibrium and responding to changes in environmental conditions.   Plant tropisms: growth responses, rhythmic activities;  Hormonal control in complex multicellular organisms. | **Plant Tropism (PPT)**   * Review Animal Hormones * Discuss environmental cues – light, gravity and temperature * Tropisms   + Phototropism   + Gravitropism (geotropism)   + Positive and negative tropisms   Class Investigation   * Set up plant prac to investigate phototropism an gravitropism * Read pages 276 and 277   Video Coordination and Control 2:Plants  Plant Hormones   * Auxins * Cytokinins * Gibberellins * Ethylene * Abscisic acid   Video-Plant Hormones-Coordination and Control | Heinemann  Chapter 14, Pages 264-275  Questions 1-4. Page 268  Questions 5-10. Page 275  ***P.250 Plant responses***  ***P. 251 Investigating Phototropism.***  ***P.252 Investigating Gravitropism.***  DVDV1624 | PPT-Plant hormones  <http://vce-unit1and2biology.wikispaces.com/Plant+hormones>  PPT-Plant hormones  Video-Coordination and ControlDVDV1624  PPT- Plant Hormones  Practical Investigation (SAT 2): PlantTropisms |
| SAC 1 – Plant hormones Phototropism and Geotropism  Students will be working on their investigation and writing reports over next 3 weeks.(Due date 18 august 2012) | | | | |

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|  | Nerve control in complex multicellular organisms. Major sense organs and pathways of transmission of nerve impulses. | Worksheet on nervous system  PPT-Nerves and Senses  Structure of NS   * Neurons – nerve cells structure and type * CNS * <http://www.youtube.com/watch?v=i-NgGKSNiNw&NR=1&feature=fvwp>   Peripheral NS   * Reflexes   + throw something soft at someone (reflex action)   + Touch something hot (reflex action)   + <http://www.youtube.com/watch?v=gyVLD0hl0XY> * Functioning nerves   + Synapses http://www.youtube.com/watch?v=HXx9qlJetSU   + action potential, conduction and chemical transmission <http://www.youtube.com/watch?v=yrsJ9HlnZ5s&feature=related> | Heinemann  Chapter 15 pp 284-296 q.8-15 on page 296  Video – Vital Systems Episode 3 Control Systems (15 minutes)  There is a prac on reflexes but cannot find it???  ***Biozone 255-256. Nerves and Senses.*** | <http://faculty.washington.edu/chudler/introb.html#pns>  <http://vce-unit1and2biology.wikispaces.com/Nervous+System> |
|  | Nerve control in complex multicellular organisms. Major sense organs and pathways of transmission of nerve impulses.  Hormonal control in complex multicellular organisms.  Physiological Adaptations:   * tolerance range of organisms, maintaining equilibrium and responding to changes in environmental conditions. | 1. Compare and Contrast Table - NS and Endocrine 2. Homeostasis  * define and connect to tolerance range * discuss some process under homeostatic control   + Thermoregulation   + Water regulation   + Blood glucose   + Oxygen and Carbon dioxide level   + control of body temperature  1. Homeostasis and negative feedback    * Read PPT and come up with PMI    * Discuss this and go through examples | Heinemann text   * Ch 15 pp278-279 Q1 and 2 * Ch 16 pp 298-316 Q 1- 15   PPT- Homeostasis  PPT – Homeostasis and Negative Feedback | <http://vce-unit1and2biology.wikispaces.com/Thermoregulation> |
|  |  | Revision  Concept mapping |  |  |

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|  | Environmental Factors: biotic and abiotic.  Availability of Resources. | Lesson 1  Components of an ecosystem   * Introduction –What is an ecosystem and why study ecosystems   + DVC-Ecosystems 2000-Effect of human impact on ecosystems   + p240 Components of an ecosystem     - define biosphere     - atmosphere     - biomes   + Climates and microclimates caused by habitat     - Discuss in terms of desserts, rain forests….     - H/WPhysical factors and Gradients p241-243 (do this for homework) Explore some of the different microclimate found in different topographies | 240 Components of an Ecosystem.  241-242. Physical Factors and Gradients. | Chapter 13, Pages 243-245  Questions 1 -2. Page 245 | DVC- Ecosystems 2000  PPT- Environmental Factors and Adaptations |
|  | Structural Adaptations: relating major features of organisms to survival value. |  |  |  | The Life of Mammals Episode 8 Life in a Tree  Word Document - Camels and Adaptations |
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| Term 3  Weeks  2-3  20th July | Behavioural Adaptations: individual and group behaviours of animals including rhythmic activities, feeding behaviours, communication, social and territorial behaviours. | **Animal Behaviour**  **Lesson 1**  Introduction – training animals using animal behaviour(benefits of understanding behaviour)   * catalyst (19/4) Equitana (17 min)   Animal behaviours (ppt) (print out)  wiki has video clips for each of these(mainly dealing with learned behaviour)  See wiki for youtube clips to support each.   * Types of behaviour   + Innate   + learned     - Imprinting     - Habituation     - Associative learning     - Trial and error learning     - Observational learning     - Insight learning   DVC-Discovering psychology (Ep.6) Learning (27 min)  **Lesson 2-3**  Animal (functional )behaviours (on wiki)   * Videos – Magpie and kookaburra * Animal (functional )behaviours (ppt) * Territorial * Aggressive * Submissive * Reproductive * 267-268. Breeding Behaviour * Appetitive   + Feeding behaviour * Animal Communication * 265-266. Animal Communication. * Rhythmic activities * 274. Biological Rhythms. * 279-280. Activity Patterns in Animals. * Social interactions- increase chance of survival   + DVC – World around Us - Socially Smart (30 minutes)   Film – Gorilla’s in the mist | 271-272. Breeding Behaviour.  269-270. Animal Communication.  278. Biological Rhythms.  279-280. Activity Patterns in Animals. | Chapter 17. Pages 319-335  Questions 1-4. Page 322  Questions 6, 8-9. Page 325  Questions 11, 14, 16. Page 330  Questions 18, 20-21. Page 335 | PPT-Animal Behaviour  PPT-Behaviour (Function)  DVC-  Discovering psychology Learning  Magpie and Kookaburra DVDs  Gorillas in the Mist DVD |
| **SAC – Animal Behaviour Assignment Research - 2-3 lesson Poster – 1 lesson** | | | | | |
|  | Reproductive adaptations: systems and strategies, development and life cycles. | PPT- Flowering Plants  PPT- Flower Structure | 199-200. Animal Reproductive Strategies.  201-202. Insect Life Cycles.  203. Mammalian Reproduction. |  |  |
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| Term 3  Week 6  17th August |  |  |  |  |  |
| SAC 2 Plant Hormones Test | | | | | |
| Term 3  Week 7  24th August |  |  |  |  |  |

**School Assessed Coursework**

**Area of Study One: Adaptations of Organisms**

SAC ONE: Animal Behaviour Investigation.

SAC TWO: Practical Investigation: Plant Tropisms.

Topic Test

Text reading and questions

Biozone Worksheets

Practical Activities and demonstrations

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| Week | Key  Knowledge |  | Biozone | Text Reading and Questions | PowerPoints, DVDs and Notes |
| Term 3  Week 8  1st Sept | Components of Ecosystems: Communities of organisms, ecological groupings, ecological niche | Redefine habitat, niche, ecosystem, environment, community, population, abiotic and biotic factors  P236 – Components of an ecosystem  Organ pipes ecosystem (What type of ecosystem is it)   * Watch the Catalyst show last Thursday 19.08.2010   Tools to bring   * Writing material * Gumboots or/and waders (bring them in Tuesday will take down in bus) * Lunch or money (can buy at Melbourne Uni)   Excursion Report   * Give out excursion handout and go through different sections of report   Testing for Oxygen (Need oxygen probe, fluid for probe, software on computer, thermometer, cooled hot water, pond water)   * Read handout-Dissolved Oxygen * Test some samples- fish pond, hot water that’s been cooled, shake some hot water. * Temperature of water required.) * Use worksheet to work out percent saturation of water.   Identifying organisms   * Microscope to identify very small * Stereo microscope for bigger insects…. * Listen and take photos (where possible of larger animals) * Resources - Ralph Miller book to help classify and Handout * PowerPoint activity   Techniques for Monitoring and Maintaining Ecosystems. | 254. Ecological Niche.  255-256. Dingo Habitats.  297-298. Dingo Food Webs  395. Monitoring Water Quality. | Chapter 19, Pages 363-381  Questions 1, 4. Page 369  Questions 5-7. Page 375  Question 9. Page 379  Questions 14-15. Page 381 | Ecosystems |
| Term 3  Week 9  7th Sept | Relationships Between Organisms: parasite/host, predator/prey, mutualism.  Flow of Energy: inputs and outputs of an ecosystem, productivity, trophic levels and trophic efficiency  Bioaccumulation.  Chemosynthesis | Review ecosystems   * PPT Dynamic ecosystem and factors that effect them * Calculate averages of the following : turbidity and dissolved oxygen and pH   Relationship between organisms   * PPPT Dynamic ecosystems-trophic levels-Food web * Energy flow in an ecosystem * Energy pyramids and Pesticides and biomagnification   Factors that effect energy flow- Competition | 240 components of an ecosystem  241-244 Physical factors and gradients  P295 Constructing a food web  297-298. Dingo Food Webs  303. Ecological Pyramids.  299-300. Energy Flow in an Ecosystem.  294. Pesticides and Biomagnification.  308. Interspecific Competition.  309. Intraspecific Competition.  310. Predator-Prey Interactions. | Chapter 20, Pages 384-401  Questions 1, 3.  Page 387.  Questions 4-5, 7. Page 391.  Questions 9, 11.  Ch 21  pp 401-413  p410 Q 3-5.  Page 414, Q6-8.  Page 394.  P401, Q 12-14.  <http://www.youtube.com/watch?v=jbpmJiI66wc> | Bioaccumulation  Parasites and Mutualism  Biological Control |
| Term 3  Week 10  14th Sept | Cycling of Matter: Water Cycle, Carbon Cycle, Oxygen Cycle, Nitrogen Cycle. | Matter is recycled in different ways through the following processes   * Water Cycle * Carbon cycle * Nitrogen cycle * Phosphorus Cycle | 312 Nutrient Cycles  319. The Water Cycle.  313-314. The Carbon Cycle.  315-316. The Nitrogen Cycle. | Chapter 21  Pages 422-423  Page 417.  Q9, 11, 12, 13.  P 418-419  Page 419-421  P423.Q 14, 16-17. |  |
| Happy Holidays  Will do this next term. Look over in holidays.  I still need to complete this | Population Dynamics: Carrying capacity of ecosystems, factors affecting distribution and abundance of organisms – birth rates, death rates, migration.  Change to Ecosystems over Time: Regular and irregular natural changes, succession.  Human activity and the sustainability of ecosystems.  Historical Practices of indigenous peoples and settlers. | Population Dynamics   * Define * Features of populations (p321 Biozone)   Managing Sustainable populations   * Factors limiting distribution and abundance * Exponential growth   Changes to Ecosystems   * Case study- changes to Australian ecosystems * Discussion what has caused the change   + Introduction of new species   + Biological control of pests   + Human activity * Theory of Succession – how communities and environments change   + Primary   + Secondary * Ecosystem stability | 321. Features of Populations.  365-366. Australian Vegetation Changes.  370. Primary Succession.  371. Secondary Succession.  375-376. Ecosystem Stability | Chapter 22 Dynamic Populations  Pages 426-443  P 430. Q 2  437 Q 5  p. 438- 443 Q 8-10  p. 459-465; p466-467  Ch 23 Change in ecosystems  p. 451-454  p.454-455 | Film – David Attenborough’s special on Human Population  Human Population – David Attenborough (Tuesday 21/09/2010) |