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

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Week | KeyKnowledge | Lessons | Biozone | Text Reading and Q’s | PPT, DVDs,Notes |
| Holidays  (3 Lessons) | Classification: purposes, principles, hierarchy of biological classification.  Features of major taxonomic groups | Classification of Living Things (3 lessons)  Discussion   * Summary of powerPoint * Go over main groups * Complete pp222-229 of s   Activity-concept map using webspiration   * Start with “Living things” * Use the powerpoint to break living things down   Classification keys   * Table of main kingdoms and summary of how to put them in groups * Homework pp231—234 Use this to begin to be able to identify features of each group * How do scientists use classification keys p235-236 as example   + Dichotomous nature of keys * Snake key * Animal worksheet * Key to Australian plant p237 | Student Manual 223-237 | Chapter 12 pp216-236 | *PowerPoint (Classification of Organisms)* |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 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   + LynClarkes Habitat PPT   + 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   Defining adaptations Activity   * Match the words to definitions using PPT- Environmental Factors and Adaptations and pp 243-245 for reference. * Enter into glossary | 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. | Lesson 2  Check H/W p241-243  Review   * Play Ecosystem ppt game (Ecosystem PPT on wiki) * Habitat PPT * Define structural, physiological and behavioural adaptations * Camels and adaptations   + Read document and discuss types of adaptations * Video on DVC – Life In a Tree   + Write down structural, physiological and behavioural adaptations * Homework - P259Animal adaptations | * 259. Animal Adaptations. * P 255 Dingo habitats-collecting and analysing data |  | he Life of Mammals Episode 8 Life in a Tree  Word Document - Camels and Adaptations |
| Term 3  Week 1  13th July- | Physiological Adaptations: tolerance range of organisms, maintaining equilibrium and responding to changes in environmental conditions. | Lesson 3  **Plant adaptations**  Plants (Adaptations)  <http://www.youtube.com/watch?v=fA4rpATxaHU&feature=PlayList&p=8FB6EAFEAF424CDC&playnext_from=PL&index=0&playnext=1>  **Plants (Structure, transport and xerophytic adaptations**  <http://www.youtube.com/watch?v=9A5zDjQ06Hs&feature=related>  Physiological Adaptations  Define   * Limiting factors * Tolerance range   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   Bookwork   * P283Adaptations in Xerophytes * P286Adaptations of hydrophytes * P285 Mangrove roots (halophytes) * H/w Plant adaptations to fire p287-288 and Ch 13 reading and questions | 283-284 Adaptations of Xerophytes.  287 Adaptations of Hydrophytes.  285 Mangrove Adaptations.  287-288. Plant Adaptations to Fire. | Chapter 13, Pages 246-260  Questions 5-6. Page 251  Questions 8, 10. Page 258  Questions 12-13. Page 260 | **Other possible videos**  http://www.youtube.com/watch?v=-PJBBowRO0w&feature=related |
| 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** | | | | | |
| Term 3  Week 4  3rd August | Nerve control in complex multicellular organisms. Major sense organs and pathways of transmission of nerve impulses.  Hormonal control in complex multicellular organisms. | Lesson 1-3   * PPT-Homeostasis * Introduction – Video Vital Systems Episode 3 Control Systems (15 minutes) * PPT-Nerves and Senses   + Neurons – nerve cells structure and type   + CNS * Prac - Reflexes * – CNS, Peripheral nerves, sense organs * Functioning nerves – action potential, conduction and chemical transmission * You tube clips of synapsis and action potentials * Worksheet on nervous system   Lesson 3   * Go through some important hormones and endocrine glands * Ppt-Animal Hormones and endocrine gland | 261-262. Nerves and Senses.  Video – Vital Systems Episode 3 Control Systems (15 minutes) | Chapter 15, Pages 284-294  Questions 7-9, 11-12, 14-15. Page 296  Chapter 15, Pages 279-284 Questions 3-5. Page 284 | PPT- Homeostasis (Hormones and Nerves)  PPT- Animal Hormones |
| Term 3  Week 5  10th August | Regulating water balance and controlling temperature. | * PPt Negative feedback   Homework - Biozone pp 263, 265 and 266 | 263-264. Control of Body Temperature.  265. Thermoregulation in Mammals.  266. Water Budget in Mammals. | Chapter 16, Pages 299-315  Questions 1-2, 4. Page 302  Questions 6-9. Page 308  Questions 14-15. Page 315 | PPT- Homeostasis and Negative Feedback |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Term 3  Week 6  17th August | Plant tropisms: growth responses, rhythmic activities. | Lesson 1  Review Hormones  Discuss environmental cues – light, gravity and temperature  Plant transport system   * Plant transport worksheet on wiki   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   Lesson 3 and 4  Check investigation take photos | PPT-Plant hormones  <http://vce-unit1and2biology.wikispaces.com/Plant+hormones>  Biozone pp159-163  PPT-Plant hormones  Video-Coordination and Control  276. Investigating Phototropism.  277. Investigating Gravitropism.  PPT-Plant hormones | Chapter 14, Pages 264-265  Questions 1-2. Page 268  Chapter 9.3 Transport system in plantspp161-168 q. 12,13 and 15 p. 168  Chapter 14, Pages 265-275  Questions 5, 7, 9-10. Page 275 | PPT  Plant Hormones\_2010  Practical Investigation (SAT 2): Plant Tropisms |
| SAC 2 Plant Hormones Test | | | | | |
| Term 3  Week 7  24th August | Reproductive adaptations: systems and strategies, development and life cycles.  Techniques used to monitor environmental change and species distribution. |  | 199-200. Animal Reproductive Strategies.  201-202. Insect Life Cycles.  203. Mammalian Reproduction.  365-366. Ecosystem Stability. |  | PPT- Flowering Plants  PPT- Flower Structure |

**School Assessed Coursework**

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

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

SAC ONE: Animal Behaviour Investigation.

SAC TWO: Practical Investigation: Plant Tropisms.

Topic Test

Text reading and questions

Biozone Worksheets

Practical Activities and demonstrations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 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) |

**School Assessed Coursework**

**Area of Study Two: Dynamic Ecosystems**

***Outcome 2. Design, conduct and report on a field investigation related to the interactions between living things and their environment and explain how ecosystems change over time.***

SAC THREE: Report on an Ecosystem.

Text reading and questions.

Biozone Worksheets.