

Western Australia

The new Biological Sciences course for WA covers two years, during which students will take one of two course combinations. In the first option, students take Units 1ABIO and 1BBIO in Year 11 and Units 2ABIO and 2BBIO in Year 12. In the second option,

students take Units 2ABIO and 2BBIO in Year 11 and Units 3ABIO and 3BBIO in Year 12. Course material is covered in the workbook in the topics indicated. The CD-ROM symbol indicates that material is available on the Teacher Resource CD-ROM.

Biological Sciences		Topic in Workbook Year 11 unless indicated	Topic in Workbook Year 11 unless indicated
Unit 1ABIO			
<p>Ecosystems: Biodiversity & Sustainability Diversity of life, reasons for diversity. Classification of organisms. Structural characteristic for classification. Food chains. Energy flow through food chains.</p> <p>Predator - prey relationships, symbiosis, parasitic relationships.</p> <p>Word equations for photosynthesis and respiration.</p> <p>The Functioning Organism Structural, behavioural and physiological adaptations of plants and animals.</p> <p>Cell structure and organelles. Comparing plant, animal, and protist cells. Levels of organisation (tissue, organ, system).</p> <p>Continuity of Species Definition of a species. Species variation.</p> <p>Life cycles of organisms.</p> <p>Physical adaptations and survival.</p> <p>Working as a Biologist Planning and conducting biological research Designing and conducting safe experiments. Collecting data and using observations and inference to make valid conclusions. Use of classification keys and microscopy. Evaluating and communicating as a biologist Communicating results and findings.</p>	<p>Classification • Classification Practical</p> <p>Communities • Cave Food Webs</p> <p>Communities Plant & Animal Nutrition • Predators & Prey Plant & Animal Nutrition Gas Exchange</p> <p>Environment & Adaptation Gas Exchange</p> <p>Yr 12 The Chemistry of Life Cell Structure</p> <p>Cellular Processes</p> <p>Yr 12 Evolution The Evolution of Australia's Biota</p> <p>Reproduction & Development</p> <p>Environment & Adaptation</p> <p>Skills in Biology Classification • Classification Practical</p> <p>Skills in Biology</p>		
Unit 1BBIO			
<p>Ecosystems: Biodiversity & Sustainability Ecosystems. Biomes. Abiotic and biotic factors. The role of water in the biosphere. Energy flow and transfer in an ecosystem. Cycling of matter in an ecosystem. Food webs and pyramids. Effect of human acclivity on food webs. Species interactions.</p> <p>The Functioning Organism Obtaining energy and oxygen. Obtaining energy and nutrients. Waste removal. Reproduction. Adaptations for support and protection from the environment and predators.</p> <p>Continuity of Species Role of cell division in growth and reproduction. Sexual and asexual reproduction. Reproductive structures. Gametes. Fertilisation mechanisms. Biotechnology to control reproduction. Use of family trees for breeding experiments. Commercial and social benefits of advances in agriculture and medicine.</p> <p>Working as a Biologist Planning and conducting biological research Designing and conducting safe experiments. Observation, data collection, inference. Use of appropriate skills (pH, volume, temperature). Evaluating and communicating as a biologist Report writing, use of tables and references. Awareness of issues raised by using GM.</p>	<p>Habitat & Niche Communities</p> <p>Communities • Cave Food Webs</p> <p>Communities Human Impact on Ecosystems Communities</p> <p>Gas Exchange Plant & Animal Nutrition Transport & Excretion Reproduction & Development Environment & Adaptation</p> <p>Cellular Processes Reproduction & Development</p> <p>Reproduction & Development Yr 12 Inheritance</p> <p>Skills in Biology</p> <p>Skills in Biology Yr 12 Gene Technology</p>		
Unit 2ABIO			
<p>Ecosystems: Biodiversity & Sustainability Classification Classification system, binomial classification. Taxonomic keys.</p> <p>Communities Autotrophs, heterotrophs, decomposers. Energy flow in food chains, webs, and pyramids.</p> <p>Cycling of matter The carbon and nitrogen cycles.</p> <p>Productivity in communities Biomass and trophic levels. Community productivity.</p> <p>The Functioning Organism Requirements of living organisms Energy, water, nutrient requirements. Waste removal.</p> <p>Photosynthesis, respiration, fermentation.</p> <p>Carbohydrates, lipids, and proteins.</p> <p>Cell Structures and functions. Cell structure and organelles. Eukaryotic & prokaryotic cells.</p> <p>Exchange of materials Diffusion and osmosis. SA:V ratio, concentration gradient.</p> <p>Adaptations Adaptations of plants and animals to terrestrial, marine and freshwater habitats. Adaptations of plant and animal transport systems.</p> <p>Adaptations for gas exchange. Gas Exchange surfaces. Adaptations for excretion in plants and animals. Adaptations for nutrient acquisition.</p> <p>Working as a Biologist Planning and conducting biological research Hypotheses, planning and conducting experiments. Microscopy techniques, magnification calculation. Written and oral reports. Use of classification keys.</p>	<p>Classification • Classification Practical</p> <p>Communities • Cave Food Webs</p> <p>Communities</p> <p>Communities</p> <p>Cellular Processes Animal & Plant Nutrition Transport & Excretion Cellular Processes Yr 12 Cellular Energetics Yr 12 The Chemistry of Life</p> <p>Yr 12 The Chemistry of Life Cell Structure</p> <p>Cellular Processes • Osmosis & Water Potential</p> <p>Environment & Adaptation</p> <p>Transport & Excretion Gas Exchange Cellular Processes • Cellular Processes Overview</p> <p>Transport & Excretion Plant & Animal Nutrition</p>		
Unit 2BBIO			
<p>Ecosystems: Biodiversity & Sustainability Population dynamics Population dynamics and change, competition. Carrying capacity, population calculations.</p> <p>Continuity of Species Mitosis and the cell cycle.</p> <p>Asexual and sexual reproduction in plants and animals. Comparisons of each strategy. Offspring survival strategies. Lifecycles. Metamorphosis.</p> <p>Process and functions of meiosis.</p> <p>DNA Genes and chromosomes. Monohybrid crosses, pedigree charts. Environment and genotype. Sex determination.</p> <p>Working as a Biologist Planning and conducting biological research Hypotheses, variables and experiments. Ecosystem study and field sampling methods. Computer modeling of population dynamics. Evaluating and communicating as a biologist. Written and oral reports, critical reflection.</p>	<p>Population Dynamics</p> <p>Cellular Processes Yr 12 Cell Division & Cloning Reproduction & Development</p> <p>Environment & Adaptation Reproduction & Development</p> <p>Yr 12 Inheritance</p> <p>Yr 12 The Genetic Code Yr 12 The Genetic Code Yr 12 Inheritance</p> <p>Skills in Biology Practical Ecology</p> <p>Skills in Biology</p>		