

## 2010 SENIOR COURSE INFORMATION

**Head of Department**  
**Dr. David Knox**

**SUBJECT:**  
**BIOLOGY**

	Year 12	Year 13
Course Content	<p><b>Ecology.</b> Includes biodiversity, community structure and inter-relationships, conservation and environmental protection. Involves a 1 day field trip to Mataikona.</p> <p><b>Cell Structure and Function.</b> Using microscopes, biochemical investigations and videos to provide practical support for investigating the structure of cells. Investigating cell processes such as osmosis, meiosis and enzyme activity is done with practical laboratory work.</p> <p><b>Plant Structure and Function.</b> Investigation into the great diversity of plant life, their importance to us and consideration of how different groups of plants have adapted or evolved to meet the requirements of terrestrial life for reproduction and the internal transport of food and/or water.</p> <p><b>Animal Structure and Function.</b> Focusing on the identification of life processes and the strategies animals use to overcome problems associated with life on land or water. Obtaining food, transporting materials around their bodies and gas exchange are investigated during this topic.</p> <p><b>Genetics, Diversity and Evolution.</b> An exploration into the characteristics of living things and how these can be passed to their offspring.</p>	<p><b>Animal Behaviour and Plant Responses.</b> Interactions of animals and plants with biotic and abiotic factors.</p> <p><b>Genetics.</b> The role of DNA and how it relates to gene expression and protein synthesis. Mendelian genetics including mutations and metabolic pathways. Inheritance and the genetic code.</p> <p><b>Research.</b> A practical topic based on an investigation into an aspect of a chosen animals' niche.</p> <p><b>Human Evolution.</b> The study of the evolution of humans from our closest mammalian relatives to now. Includes biological and cultural evolution.</p> <p><b>Evolutionary Processes.</b> The development of new species and the processes and patterns that occur over time. Particular emphasis is given to unique New Zealand examples.</p> <p><b>Biotechnology.</b> An investigation into the techniques and processes used by biologists in the science of biotechnology. Includes genetic engineering and cloning, transgenesis, gel electrophoresis and using restriction enzymes</p>
Pre Requisites	Achievement in Science Level 1 ( 14 credits including AS90188 Describe aspects of Biology)	Achievement in at least 14 credits from Level 2 Biology or at the discretion of HOD.
Assessment	<p><b>External (15 credits)</b></p> <p>AS90459 Describe the processes that lead to genetic variation and change. (3)</p> <p>AS90461 Describe concepts and processes in ecology.(3)</p> <p>AS90462 Describe diversity in structure and function of animals. (3)</p> <p>AS90463 Describe diversity in structure and function of plants. (3)</p> <p>AS90464 Identify and describe cell structure and processes. (3)</p> <p><b>Internal (9 credits)</b></p> <p>AS90457 Carry out a biological investigation with supervision (3)</p> <p>AS90460 Investigate an interrelationship or pattern in a population or community (3)</p> <p>AS90769 Research an example of applied biology (3)</p>	<p><b>External (14 credits)</b></p> <p>AS90715 Describe the role of DNA in relation to gene expression. (4)</p> <p>AS90716 Describe animal behaviour and plant responses in relation to environmental factors. (4)</p> <p>AS90717 Describe processes and patterns of evolution.(3)</p> <p>AS90719 Describe trends in human evolution. (3)</p> <p><b>Internal (10 credits)</b></p> <p>AS90713 Carry out an investigation into the ecological niche of an organism with guidance. (4)</p> <p>AS90714 Research a contemporary biological issue.(3)</p> <p>AS90718 Describe applications of biotechnological techniques.(3)</p>
Costs	Workbooks \$20-\$25 approximately	Workbooks and Text \$35.00 Zoo trip \$30.00