Year 13 Biology
Course Outline

Preamble

Year 13 Biology is a Level 3 NCEA subject. It follows the NCEA Level 2 Biology programme. These include adaptations of mammals, genetics and evolution, gene expression, microscopic study, cell biology and processes, an ecological practical study and a practical investigation.

Aims of the Course
Life is incredibly varied, yet based on common processes. Biologists – and students studying biology – seek evidence to explain the nature of living things, and to understand where and how life is evolving, how evolution links life processes and ecology, and the impact that humans have on all forms of life.

Through learning in biology, students discover that life involves interactions at all levels of organisation: cells interact with their environment and with each other, so do organs, organisms and ecosystems. No living thing exists in isolation from its environment.

The following non-exhaustive list suggests the diversity of careers into which graduates in biological science go: Agronomist, animal behaviour scientist, animal welfare officer, biochemist, biotechnologist, cheese production supervisor, conservation biologist, environmental analyst, environmental medical sciences, sports sciences, plant pathologist, plant physiologist,
Description - This course includes.....

1. Residential field trip: Practical investigation of environmental stressors Kaikoura
2. Biotechnology: Human manipulation and genetic transfer and implications
3. Homeostasis: Human adaptations to extreme conditions.
4. Responses: Animal and plant orientation to the external environment.
6. Speciation: Evolutionary patterns and speciation in NZ.

The focus of the course is to give a high level, broad understanding of biological ideas and issues. There is an emphasis on laboratory and field work including statistical analysis as well as skills to research a contemporary issue and critically analyse a range of opinions. It is essential preparation for entry to university medical sciences, biotechnology, food technology, environmental studies, sports science and general interest.

Assessment and Reassessment
There will be 3 internal assessments during the year. The Practical Investigation to be completed 6-9 April on the 4-day field trip to the Canterbury University Field Station at Kaikoura. There will be no reassessment opportunities. There will be clear milestones for each assessment and the Dean and parents will be informed if you are not working at the appropriate level.

Field trips and visiting speakers
There will be a 4 day field trip to Kaikoura for the practical internal assessment and students may choose to go dolphin swimming or seal kayaking. A forensic scientist from ESR will be invited to support our studies in genome analysis and gene manipulation. You will be invited to Royal Society public lectures e.g on H.floresiensis

Rules and Regulations
There are some specific rules about assessments. Please refer to the College Handbook on NCEA assessments, particularly about the ownership of work and plagiarism. You will be expected to check your work for plagiarism with ‘turnitin.com’.

Stationary
Y13 Biology Biozone Student Workbook are to be purchased through the school and will be used to make handwritten responses and diagrams. Course content, Assignments and Handouts can be accessed through One Note. You can choose to make your own key notes on One Note, Biozone or an exercise book.

Prep
Complete the Biozone workbook and Revision assignments on time. Read around each topic and keep up to date by reading NewScientist, Nature or other magazines and discuss your findings with your teacher. Prepare your own summary notes of each topic for later revision.

Tutorials
Ask for a tutorial when you want one. Be pro-active about your learning and ask questions. Scholarship students need to complete extension work in Biozone and assignments. A copy of the Southern Traverse will be made available on the virtual classroom along with answer schedules for text papers and revision worksheets.

Scholarship

Textbook and Reference Books
Excellence in Biology Level 3 by Martin Hanson (Hard copy or digital)
Apes and Ancestors (2012)
Biotechnology (2012)
ESA Study Guide 2015 (Digital)
Student workbook – Biozone NCEA L3
Use the library Epic to access magazines: “NewScientist’ and “Scientific American’, “Nature’ and ‘NZ Forest and Bird’. Read widely on evolution with books such as ‘Origin of Species by Darwin, Climbing Mt Improbable by Richard Dawkins, NZ plants and animals, Issues in biology.
Year 13 Biology Calendar 2015

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<tr>
<th>Approx. Time (weeks)</th>
<th>Standard No</th>
<th>Description</th>
<th>Credits</th>
<th>Intern/External</th>
<th>Mode of assessment</th>
<th>Date Due</th>
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<td>4</td>
<td>AS 91604v1 3.4</td>
<td>How humans respond to changes in the internal environment – Homeostasis</td>
<td>3</td>
<td>Int</td>
<td>Report</td>
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<td>AS 91603v1 3.3</td>
<td>Animal and plant responses to changes in the environment</td>
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<td>Exam</td>
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<td>Biological Practical Investigation at Kaikoura 3 - 6 May</td>
<td>4</td>
<td>Int</td>
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<td>AS 91607v1 3.7</td>
<td>Biotechnological techniques Human manipulation and genetic transfer and implications</td>
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<td>AS 91605v1 3.5</td>
<td>Describe processes and patterns in evolution</td>
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<td>Trends in human evolution- human biological and cultural evolution, patterns of dispersal of hominins</td>
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<td>Exam</td>
<td>Week9</td>
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**Modes of Internal assessment**

**AS 91604 v1 (3 Credits) Homeostasis- how humans respond to changes in the internal environment**
The investigation will include a study of the Southern traverse and the effect this has on the human body. You will work in groups to compare the various stages in the trip and the consequences. The second part will be carried out individually and involve the ‘Coast to Coast ‘ race and a report.

**AS 91601 v1 (4 credits) Practical investigation**
The investigation is practical and takes place at the field station on the Kaikoura shores. You will study the effect of environmental stressors on a macro invertebrate. With guidance students will design and carry out an investigation and analyse the data statistically to write a comprehensive conclusion and evaluation in a report.

**AS 91607 v1 (3 credits) Biotechnology – genetic manipulation**
The research and investigation into genetic engineering includes a practical study of the ‘toolkit’ used by geneticists to manipulate genes. You will study selective breeding and transgenesis and write a report which sets out to compare and consider the evidence, ethics and implications.