

Biology – Higher Level

IB Biology HL is a two-year, 240 hour course that allows the student to continue the study of biology, examining living organisms and systems. The course weaves four concepts through each of the topics: structure and function, universality vs. diversity, equilibrium within systems, and evolution. Students come to realize that some structures permit some functions while limiting others. They link processes at molecular levels to physiological and ecological processes at the systems level and come to understand that evolution and genetics leads to diversity and adaptations. Diversity of species and habitats can then be appreciated along with an awareness that a state of equilibrium is essential for the continuity of life.

Subject Areas

1. **Cells** - Prokaryotic and Eukaryotic cells, membranes, cell division.
2. **The Chemistry of life** – biochemical, enzymes, DNA structure and replication, respiration, photosynthesis.
3. **Genetics** - Chromosomes, genes, alleles, mutation and meiosis.
4. **Ecology and Evolution** – communities, ecosystems, population dynamics, evolution, classification.
5. **Human Health and Physiology** - digestion, circulatory, respiratory and reproductive systems, homeostasis, excretion
6. **Nucleic acids and proteins** - DNA structure, replication, transcription, translation, proteins
7. **Cell respiration and photosynthesis**
8. **Genetics** - meiosis, dihybrid crosses, autosomal gene linkage and polygenic inheritance.
9. **Human Reproduction** - production of gametes, fertilization, pregnancy
10. **Defense against infectious disease** – types of defenses, immunity, antibodies, lymphocytes.
11. **Nerves, muscles and movement** – neurons, action potentials, skeletal muscle structure, joints
12. **Excretion** - The human kidney: structure and physiology.
13. **Plant Science** – structure, transport and reproduction in angiosperms.

Options

14. **Neurobiology and Behavior** – types of behavior, perception of stimuli; innate, learned and social behavior; the ANS; neurotransmitters and synapses.
15. **Further human physiology** – hormonal control, digestion, functions of the liver, the transport system, gas exchange

Assessment

Internal Assessments Interdisciplinary project, a mixture of short or long term investigations (practical and subject specific projects) 24%

This requires completion of 60 hours of Practical Investigations and must include completion of the Group 4 Project. All Group 4 Science students must complete the Group 4 research project in Grade 11 in addition to the required hours of investigative work over the two-year course. Internal Assessment will be based upon the IBO Diploma Assessment criteria for Practical reports in the areas of Planning, Data Collection, Data Processing and Presentation, Conclusion and Evaluation, Manipulative Skills, and Personal Skills. Practical reports completed by students across the two-years course will be assessable.

External	Paper 1	1 hr – 40 multiple choice questions on the core	20%
	Paper 2	1 ¼ hrs <ul style="list-style-type: none"> • One data based question and several short answer questions on the core • Two extended response question on the core • (A choice of four) 	36%
	Paper 3	Several short answer questions in each of the two options studied (all compulsory)	20%