

## IBDP Biology SL/HL

**Teacher:** Emma Campbell  
**Email:** emma.campbell@aism-moz.com

Should you wish to learn more about our course or to discuss your learner's progress, please reach out to the email above to schedule a time to meet.

### Course Description and Units of Learning:

Biologists investigate the living world at all levels using many different approaches and techniques.

At one end of the scale is the cell, its molecular construction and complex metabolic reactions. At the other end of the scale biologists investigate the interactions that make whole ecosystems function. Many discoveries remain to be made and great progress is expected in the 21st century.

Through studying a science subject student should become aware of how scientists work and communicate with each other. While the scientific method may take on a wide variety of forms, the emphasis is on a practical approach. In addition, through the overarching theme of the "Nature of Science" this knowledge and skills will be put into the context of way science and scientists work in the 21<sup>st</sup> Century and the ethical debates and limitations of creative scientific endeavour.

The sciences are taught practically. Students have opportunities to design investigations, collect data, develop manipulative skills, analyze results, collaborate with peers and evaluate and communicate their findings. The investigations may be laboratory based or they may make use of simulations and data bases. Students develop the skills to work independently on their own design, but also collegiately, including collaboration with schools in different regions, to mirror the way in which scientific research is conducted in the wider community.

For a more detailed exploration of this course, [the IB Subject Guide is available at this link for Standard Level](#) and [at this link for Higher Level](#).

Molecules of Life (SL and HL)

Molecules to metabolism (SL and HL) - Living organisms control their composition by a complex web of chemical reactions.

Water (SL and HL) - is the medium of life.

Carbohydrates and lipids (SL and HL) - Compounds of carbon, hydrogen and oxygen are used to supply and store energy.

Proteins (SL and HL) - have a very wide range of functions in living organisms.

Cells (SL and HL)

Introduction to cells (SL and HL) - The evolution of multicellular organisms allowed cell specialization and cell replacement.

The origin of cells (SL and HL) - There is an unbroken chain of life from the first cells on Earth to all cells in organisms alive today.

Ultrastructure of cells (SL and HL) - Eukaryotes have a much more complex cell structure than prokaryotes.

Membrane structure (SL and HL) - The structure of biological membranes makes them fluid and dynamic.

Membrane transport (SL and HL) - Membranes control the composition of cells by active and passive transport.

Cell Division (SL and HL) - Cell division is essential but must be controlled.

Enzymes, Metabolism and Digestion (SL and HL)

Enzymes (SL and HL) - Enzymes control the metabolism of the cell.

Digestion and absorption (SL and HL) - The structure of the wall of the small intestine allows it to move, digest and absorb food.

Metabolism (HL only) - Metabolic reactions are regulated in response to the cell's needs.

Ecology (SL and HL)

Blood System, Gas Exchange and Defence (SL and HL)

Evidence for evolution (SL and HL) - There is overwhelming evidence for the evolution of life on Earth.

Natural selection (SL and HL) - The diversity of life has evolved and continues to evolve by natural selection.

Gene pools and speciation (HL only) - Gene pools change over time.

Classification of biodiversity (SL and HL) - Species are named and classified using an internationally agreed system.

Clastistics (SL and HL) - The ancestry of groups of species can be deduced by comparing their base or amino acid sequences.

Plant Biology (HL only)

Transport in the xylem of plants (HL only) - Structure and function are correlated in the xylem of plants.

Transport in the phloem of plants (HL only) - Structure and function are correlated in the phloem of plants.

Growth in plants (HL only) - Plants adapt their growth to environmental conditions.

Reproduction in plants (HL only) - Reproduction in flowering plants is influenced by the biotic and abiotic environment.

Photosynthesis and Respiration (SL and HL)

Cell respiration (SL and HL) - Cell respiration supplies energy for the functions of life.

Metabolism of Cell Respiration (HL only) - Energy is converted to a usable form in cell respiration.

Photosynthesis (SL and HL) - Photosynthesis uses the energy in sunlight to produce the chemical energy needed for life.

Metabolism of Photosynthesis (HL only) - Light energy is converted into chemical energy.

Coordination and Response (SL and HL) Cell respiration (SL and HL) - Cell respiration supplies energy for the functions of life.

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This year we have begun planning and implementing units of study based on our Critical Learning Outcomes within the IB MYP and DP frameworks. Please see ManageBac for unit overviews as they are taught throughout the year.

## **Assessment in the Diploma Programme**

Assessment is a key component of the learning process as it allows teachers to respond with targeted feedback to learners for continued growth and to revise their instruction to better meet the needs of their learners. In order to provide learners with the opportunity to reach critical learning outcomes and develop a range of approaches to learning skills, our IB Diploma teachers develop rigorous tasks that embrace a variety of strategies in line with desired learning outcomes and with each course's internal and external assessments.

Working backwards from these assessment components, teachers craft learning experiences which support each learner's mastery of key content, concepts, and skills in every subject. Learners can expect to receive regular feedback on all three elements, with important culminating experiences such as IA drafts and mock examinations in the second year. For culminating tasks, teachers and learners are guided by criteria provided at least one week prior to the due date. DP teachers also work to ensure that learners not only understand but engage in applying evaluation criteria to their own work as well as that of their peers. Core components such as Theory of Knowledge, CAS, and the Extended Essay support each learner's progress across the programme, as learners apply critical thinking, the design cycle, and research skills to each subject.

Families and learners at AISM can expect to receive regular reporting of their performance as they work towards mastery of critical learning outcomes.

## **Learning Management Systems**

Across the Secondary School, we utilize ManageBac for sharing key activities and assessments, as a digital workspace, for communication with learners, and for reporting on learner performance to families. Some teachers may supplement the digital learning environment with Google Classroom, and you can expect an emailed invitation to sign up for regular updates from Google Classroom if so.

## **Homework**

Any learning activity which is expected to take place outside of the classroom will appear as assignments and tasks on ManageBac. Homework is most often an extension of activities or

projects either begun or included in the classroom, but may include common activities like reading, reinforcement of content or skills within a unit of study, or distributed practice activities, such as flashcards for example, to support learner recall of low-level content.

## **Reporting**

As a rough guide, learners and families can expect an update on performance every few weeks. These updates, available in ManageBac, represent a check-in on learner performance toward mastering critical course objectives and learning outcomes, prior to each unit's culminating assessment.