

IB Biology 11 (HL)

Welcome to IB Biology. The IB curriculum is made up of Core and Optional topics. The curriculum will be divided between grade 11 and 12 and will all be examined in May of grade 12.

In IB Biology 11, we will cover:

- Topic 5 – Evolution and biodiversity
- Topic 9 – Plant biology
- Topic 1 – Cell Biology
- Topic 3 – Genetics
- Topic 10 – Genetics and Evolution
- Topic 4 – Ecology

In IB Biology 12, we will cover:

- Topic 2 – Molecular biology
- Topic 7 – Nucleic acids
- Topic 8 – Metabolism, cell respiration and photosynthesis
- Option A – Neurology and behaviour
- Internal Assessment
- Topic 6 – Human physiology
- Topic 11 – Animal physiology

In both grades we will also do practical activities such as labs, computer simulations, and field studies, though clearly this year things will look a little different than usual.

A detailed list of all the IB Biology learning outcomes will be handed out in class.

Syllabus component	Teaching hours
Core	95
1. Cell biology	15
2. Molecular biology	21
3. Genetics	15
4. Ecology	12
5. Evolution and biodiversity	12
6. Human physiology	20
Additional higher level (AHL)	60
7. Nucleic acids	9
8. Metabolism, cell respiration and photosynthesis	14
9. Plant biology	13
10. Genetics and evolution	8
11. Animal physiology	16
Option	25
A. Neurobiology and behaviour	25
Practical scheme of work	60
Practical activities	40
Individual investigation (internal assessment-IA)	10
Group 4 project	10
Total teaching hours	240

Evaluation

Students will be assessed through a variety of assignments, labs and tests

- Formative strategies – Students will practice their learning with feedback. It is not counted toward final grade, but builds skills and knowledge that will be applied in summative strategies.
- Summative – Final demonstration of learning. These are written assessments that are a mix of multiple choice and short answer questions. There will also be verbal assessments, in which students are asked to individually explain processes.

Each topic will be weighted to reflect the number of learning outcomes that students must meet. As per **PMSS's IB Assessment Policy**, students will be assessed according to the IB 7 point scale, which reflects which level students are currently at with respect to the IB Biology learning outcomes. This scale mark will then be converted to a percentage following a rubric created by UBC for report cards. UBC's scale takes into account the added difficulty and workload required by IB.

Current Estimated IB grade	Report Card %
7	98-100
6	96-98
5	90-95
4	86-89
3	76-85
2	70-75
1	0-49

PMSS Work Habits rubric

Criteria	N	S	G
Punctuality	Consistently arrives late	Usually arrives on time	Arrives on time and ready to start
Works Independently	Distracts others; not on task; requires close supervision	Usually focused on task; may need some supervision	Remains on task without reminders; works quietly and efficiently
Initiative	Has difficulty starting to work; doesn't ask for help; doesn't get caught up after absence; doesn't participate	Participates when asked; begins to work when assignment given; works hard most of the time	Volunteers to ask and answer questions; will help others; knows what needs to be done and does it
Homework	Few assignments and homework complete	Homework and assignments usually completed	Homework and assignments complete
Teamwork	Interrupts, distracts, or disrupts others; difficult to work with	Usually cooperative; participates and follows the lead of others	Consistently demonstrates cooperation, respect, and leadership

Resources

- Textbook: Biology 2014 Edition Allott and Mindorff
- Notes, powerpoints and videos used in class can also be found in the IB Biology 11 Class on Managebac

Expectations

- **PMSS's IB Academic Honesty Policy** is expected to be followed at all times. Please refer to it on the school's website, and make sure you understand all of the expectations.
 - You are expected to work on your own to complete all assignments. Lab partners may collect data together, but the presenting of the data, calculations, discussions and conclusions in lab write ups must be completed **independently**. Working together constitutes academic dishonesty and is a form of plagiarism that is not acceptable.
 - Plagiarism is not tolerated in any form. You may not use material from the internet, or print material, without referencing. Work done by a tutor and previous course work from a friend is considered plagiarism. Telling your peers what is on a test, or asking for assessment information is academic dishonesty. Please see the PMSS Academic Honesty Policy for more information.
- All lab work and assignments must be handed in on time, at the beginning of class. If something needs to be printed, it must be done ahead of time, and be ready to hand in at the start of class.
- You will receive 2 types of assessment on report cards, a percentage based on your understanding of the learning outcomes and a work habits grade. In order to receive a "G" work habit, you will need to complete all assignments on time and PARTICIPATE in class. Ask lots of questions, volunteer answers and be actively involved in discussions.
- Please feel free to send me questions by e-mail and Teams.

Office Hours

- This year office hours will look different. You should stay in class during Flex time or come during X block when you need more help. You can always email or contact us via Teams to ask questions or to arrange a meeting.

Final IB Biology Assessment (May 2022)

Component	Overall weighting (%)	Approximate weighting of objectives (%)		Duration (hours)
		1+2	3	
Paper 1	20	10	10	1
Paper 2	36	18	18	2¼
Paper 3	24	12	12	1¼
Internal assessment	20	Covers objectives 1, 2, 3 and 4		10

External assessment details—HL

Paper 1

Duration: 1 hour

Weighting: 20%

Marks: 40

- 40 multiple-choice questions on core and AHL material, about 15 of which are common with SL.
- The questions on paper 1 test assessment objectives 1, 2 and 3.
- The use of calculators is not permitted.
- No marks are deducted for incorrect answers.

Paper 2

Duration: 2¼ hours

Weighting: 36%

Marks: 72

- Data-based question.
- Short-answer and extended-response questions on core and AHL material.
- Two out of three extended response questions to be attempted by candidates.
- The questions on paper 2 test assessment objectives 1, 2 and 3.
- The use of calculators is permitted. (See calculator section on the OCC.)

Paper 3

Duration: 1¼ hours

Weighting: 24%

Marks: 45

- Section A: candidates answer all questions, two to three short-answer questions based on experimental skills and techniques, analysis and evaluation, using unseen data linked to the core and AHL material.
- Section B: short-answer and extended-response questions from one option.
- The questions on paper 3 test assessment objectives 1, 2 and 3.
- The use of calculators is permitted. (See calculator section on the OCC.)

Group 4 aims

Through studying biology, chemistry or physics, students should become aware of how scientists work and communicate with each other. While the scientific method may take on a wide variety of forms, it is the emphasis on a practical approach through experimental work that characterizes these subjects.

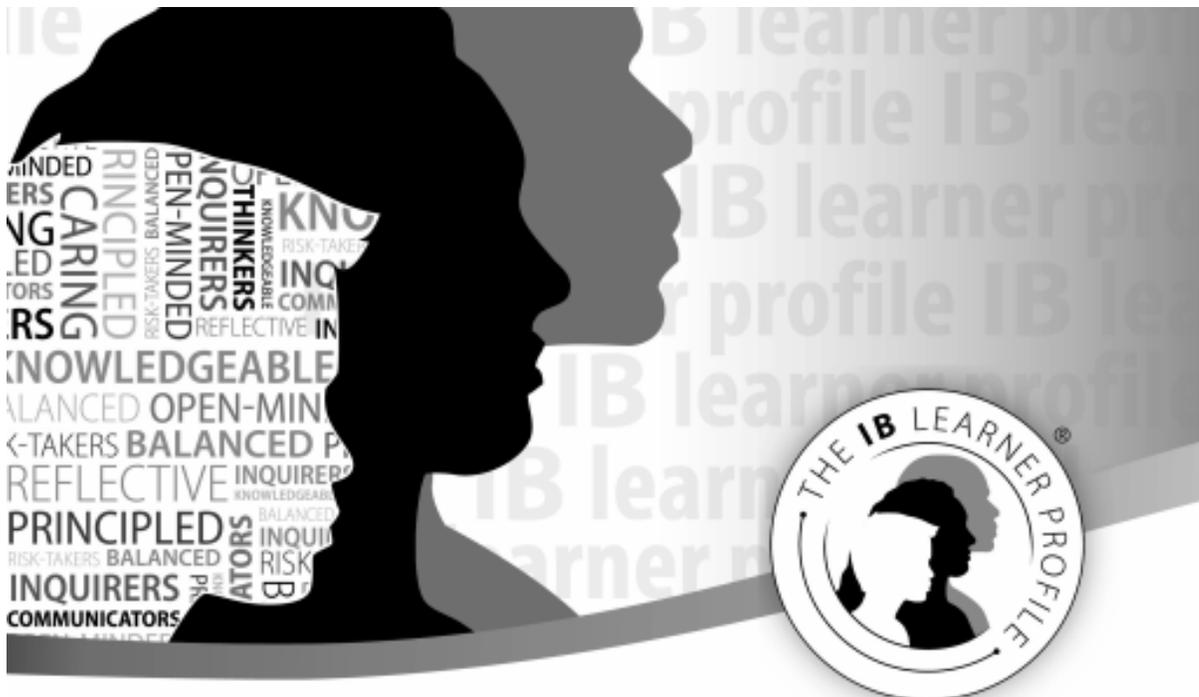
The aims enable students, through the overarching theme of the Nature of science, to:

1. appreciate scientific study and creativity within a global context through stimulating and challenging opportunities
2. acquire a body of knowledge, methods and techniques that characterize science and technology
3. apply and use a body of knowledge, methods and techniques that characterize science and technology
4. develop an ability to analyse, evaluate and synthesize scientific information
5. develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities
6. develop experimental and investigative scientific skills including the use of current technologies
7. develop and apply 21st century communication skills in the study of science
8. become critically aware, as global citizens, of the ethical implications of using science and technology
9. develop an appreciation of the possibilities and limitations of science and technology
10. develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge.

Assessment Objectives

The assessment objectives for biology, chemistry and physics reflect those parts of the aims that will be formally assessed either internally or externally. These assessments will centre upon the nature of science. It is the intention of these courses that students are able to fulfill the following assessment objectives:

1. Demonstrate knowledge and understanding of:
 - a. facts, concepts and terminology
 - b. methodologies and techniques
 - c. communicating scientific information.
2. Apply:
 - a. facts, concepts and terminology
 - b. methodologies and techniques
 - c. methods of communicating scientific information.
3. Formulate, analyse and evaluate:
 - a. hypotheses, research questions and predictions
 - b. methodologies and techniques
 - c. primary and secondary data
 - d. scientific explanations.
4. Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.



IB learner profile

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

As IB learners we strive to be:

INQUIRERS

We nurture our curiosity, developing skills for inquiry and research. We know how to learn independently and with others. We learn with enthusiasm and sustain our love of learning throughout life.

KNOWLEDGEABLE

We develop and use conceptual understanding, exploring knowledge across a range of disciplines. We engage with issues and ideas that have local and global significance.

THINKERS

We use critical and creative thinking skills to analyse and take responsible action on complex problems. We exercise initiative in making reasoned, ethical decisions.

COMMUNICATORS

We express ourselves confidently and creatively in more than one language and in many ways. We collaborate effectively, listening carefully to the perspectives of other individuals and groups.

PRINCIPLED

We act with integrity and honesty, with a strong sense of fairness and justice, and with respect for the dignity and rights of people everywhere. We take responsibility for our actions and their consequences.

OPEN-MINDED

We critically appreciate our own cultures and personal histories, as well as the values and traditions of others. We seek and evaluate a range of points of view, and we are willing to grow from the experience.

CARING

We show empathy, compassion and respect. We have a commitment to service, and we act to make a positive difference in the lives of others and in the world around us.

RISK-TAKERS

We approach uncertainty with forethought and determination; we work independently and cooperatively to explore new ideas and innovative strategies. We are resourceful and resilient in the face of challenges and change.

BALANCED

We understand the importance of balancing different aspects of our lives—intellectual, physical, and emotional—to achieve well-being for ourselves and others. We recognize our interdependence with other people and with the world in which we live.

REFLECTIVE

We thoughtfully consider the world and our own ideas and experience. We work to understand our strengths and weaknesses in order to support our learning and personal development.

The IB learner profile represents 10 attributes valued by IB World Schools. We believe these attributes, and others like them, can help individuals and groups become responsible members of local, national and global communities.

Approaches to Teaching and Learning

The IB Diploma Programme Approaches to Teaching and Learning are deliberate strategies, skills, and attitude that permeate the IB Teaching and Learning environment. The IB believes that a large influence on a student's education is not only what you learn by how you learn. Teaching students how to learn will improve the quality of teaching and learning across the entire IB spectrum of programmes.

The IB approaches to learning skills are:

- Thinking skills
- Communication skills
- Social skills
- Self-management skills
- Research skills

The IB approaches to teaching skills are:

- based on inquiry
- focused on conceptual understanding
- developed in local and global contexts
- focused on effective teamwork and collaboration
- differentiated to meet the needs of all learners
- informed by formative and summative assessment.

Links to Theory of Knowledge

- In Theory of Knowledge, students will be introduced to 8 “Ways of Knowing”. Through IB Biology 11, we will also discuss how scientists use Reason, Language, Sense Perception, Intuition, Imagination and Memory in order to increase and communicate scientific knowledge.

International Mindedness

- Science itself is an international endeavour—the exchange of information and ideas across national boundaries has been essential to the progress of science. Indeed, the idea that science is a Western invention is a myth—many of the foundations of modern-day science were laid many centuries before by Arabic, Indian and Chinese civilizations, among others. The scientific method in its widest sense, with its emphasis on peer review, open-mindedness and freedom of thought, transcends politics, religion, gender and nationality. Increasingly there is a recognition that many scientific problems are international in nature and this has led to a global approach to research in many areas.
- Throughout the two year of IB Biology, students will be introduced to examples of international efforts working together to increase scientific knowledge and examine how scientific breakthroughs affect people in different regions of the world.