

Biology/chemistry/physics—Frequently asked questions

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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.

General content

Are students expected to include uncertainties in their internal assessment (IA), even though it is not a distinct topic anymore?

Uncertainties are included in the prescribed skill requirement that accompanies the course. These, together with other mathematical requirements, techniques and tools, should support the teaching of the sciences as an experimental course.

Is there a prescribed teaching order?

No. The aim of the syllabus is to integrate concepts, topic content and the nature of science (NOS) through inquiry. Teachers are encouraged to personalize their approach to the syllabus according to their circumstances and interests.

Is NOS assessed in examinations?

A general understanding of NOS will be assessed in paper 1 and paper 2. There is no expectation that students should memorise the 11 aspects stated in the subject guide.

What is the recommended teaching time for NOS and the prescribed skills (“Skills in the study of biology/chemistry/physics”)?

Teachers are encouraged to provide opportunities for students to develop a thorough understanding of the application of both NOS and the prescribed skills throughout the programme. They should not be taught as stand-alone topics, but integrated into the teaching of the syllabus when relevant to the topics being covered. The recommended number of hours for teaching the syllabus understandings is sufficient to address the 11 aspects of NOS and the prescribed skills.

Where can I find past examination question papers and markschemes?

There are available to purchase through [Titlewave](#).

Experimental programme

Why have prescribed practicals been removed from the syllabus?

Prescribed practicals have been replaced by prescribed skills, set out in the “Skills in the study of biology/chemistry/physics” section. This allows teachers more freedom in choosing practicals and creating an experimental programme which most suits their school context.

What happens if a student misses part of the collaborative sciences project due to illness or a transfer from another school?

The school must explore alternative ways for the student to complete the collaborative sciences project. It is possible to collaborate with another school, either locally or globally. This could range from simply sharing evaluations for a common topic to a full-scale collaborative venture including all stages of the project.

If the collaborative science project is organised in the first year of the DP, a student who is absent or joins from another school may join the project in year 2. They would then need to participate in the collaborative science project along with the next cohort in the school.

Is the collaborative sciences project externally assessed by the IB?

The collaborative sciences project is not externally assessed by the IB but completion of the project is a requirement of the course. Evidence of this is achieved through the completion of a collaborative sciences project reflection form, a suggested template of which can be found in the “In practice” section of the subject website.

Should schools upload collaborative sciences project reflection forms?

The purpose of these forms is to enable students to reflect on their collaborative science project; therefore there is no requirement to upload them. However, schools must keep a record of each student’s reflection. The template provided is a suggestion of how the 100-word reflection may be recorded. Schools are free to create their own version.

My school only offers one DP science course. How can we ensure the collaborative sciences project brings in perspectives from different science disciplines?

For schools with few DP students or where only one science is offered, schools are encouraged to collaborate with another school. It is also possible to work with non-DP or non-sciences students or undertake the project once every two years by combining first and second year students.

Internal assessment

Scientific investigation

Do you have any suggestions for how to deal with large class sizes/limited resources/no laboratory technician/limited laboratory time?

The challenge comes from the fact that each student will be working on a different investigation, which may put strain on resources. Teachers could consider carrying out a phased IA, with some students doing research, others undertaking practical work and others planning their write-up or analysing data. This will be made easier if students share their plans with teachers so that resources can be allocated efficiently and the class can be divided into groups which can work at different times. The key to dealing with limited resources is to plan with the students to ensure the smooth running of each investigation.

Should the IA be carried out in the second year of the course?

Most schools will carry out the IA in the second year, but each school is free to decide the stage of the course most appropriate to carrying out the scientific investigation. The IA should be carried out when students have developed sufficient skills and subject knowledge. The school DP or Careers-related Programme coordinator should create a plan for when different subjects carry out their IA task.

Is the use of sensors compulsory for the scientific investigation?

Sensors do not need to be used during the scientific investigation. However, students are required to collect data using sensors at some point during their two-year course. Note that data logging software is available for mobile devices and for some graphing calculators, so a school that does not have traditional data loggers can seek cheaper ways to fulfil this requirement. This guidance also applies to databases and computer modelling or simulations.

Classroom practice

Do schools need to upload a record of their experimental programme?

There is no requirement to upload this document. A *Record of experimental programme* template is provided as a suggestion for schools to record the cohort's experimental programme. Schools have the freedom to create their own document; however it does need to contain the same information.

Can students include an appendix to their IA?

An appendix must not be included except to show an example of a blank consent form, or a questionnaire used in the investigation. If a large amount of data has been collected, a representative sample could be shown in the final report. Graphs can also be used to highlight patterns in large amounts of data that have been collected in place of a large table. Teachers should confirm that all of the data is authentic.

Does the scientific investigation have to relate to the content covered in the syllabus?

There is no requirement that the investigation topic should be drawn from the syllabus content; however, it must be commensurate to the level of the subject.

Moderation

What happens if the scientific investigation report goes above the 3000-word limit?

The 3000-word limit must not be exceeded. Examiners are instructed to stop reading after 3000 words.

Is it a requirement that moderation should be documented? If so, how is this done?

Refer to [Diploma Programme assessment procedures](#) for the session for details about the internal moderation process to be carried out within a school.

External assessment

Are students allowed to take a rest between paper 1A and paper 1B?

No. Paper 1 is made of two physically separate booklets: paper 1A and paper 1B. Students will be given both parts at once at the beginning of the examination, which must be taken without interruption. Students should be advised to monitor the timing of their examination and decide which questions/sections they wish to answer first.

Both the multiple-choice answer sheet for paper 1A and paper 1B will be collected by the invigilators at the end of the examination session.

Will the nature of the multiple-choice questions change now that students are allowed access to a calculator?

Multiple-choice questions will continue to be written in a way that mental arithmetic can be used to solve the question.

If there are no prescribed practicals, how do we know what can be assessed in paper 1B?

Skills listed in the guide sections “Skills in the study of biology/chemistry/physics” and general understanding of laboratory techniques will be assessed in paper 1B.

Will all the prescribed skills be assessed?

The prescribed skills will be assessed through paper 1B and the scientific investigation. Note that over the course of several examination sessions, all prescribed skills may be assessed.

How can students who find it difficult to manage multiple papers on their desk at the same time be supported?

Guidance will be provided by the IB’s Access and Inclusion team ahead of the first assessment.

Will the change in the structure of paper 1 mean the examination announcement will also change?

Students will be given a five-minute reading time at the start of paper 1 in line with all other examinations. They will also receive the standard reminders toward the end of the paper. Full details are provided in *Conduct of examinations booklet* for each session.

How are the application of skills in biology assessed?

One of the new focuses of the guide is to specify the application of skills that all students should develop throughout the two-year course. Questions referring to these general skills or techniques may be asked in any paper. However, paper 1B is specifically set for the test of data-analysis skills, so questions based around many of these skills and techniques are generally limited to this section.

Each of the four standard level questions in paper 1B will be worth between 5 to 8 marks per question, totalling 25 marks. Around 10 to 15 marks will be available for application of skills across the four questions.

Each of the four higher level questions in paper 1B will be worth between 7 to 10 marks per question, totalling 35 marks. Around 15 to 20 marks will be available for application of skills across the four questions.