

What is Physics?

Physics is the most fundamental of the experimental sciences, as it seeks to explain the Universe itself, from the smallest particle to distant galaxies. Despite exciting and extraordinary development of ideas throughout the history of physics, observation remains at the very core of the subject. Models are developed to interpret observations, which eventually become theories that attempt to explain the observations. Besides helping us better understand the natural world, physics gives us the capacity and power to transform our physical environment. This raises vital issues on the impact of physics on society, the social, economic and environmental implications and the consequent moral and the ethical dilemmas of the work of physicists.

What skills would I develop, as a learner?

In the pursuit of gaining competence in physics, the learner develops impeccable skills of designing, conducting and interpreting scientific research, conducting statistical analyses, applying scientific methodology to problem-solving, communicate findings using models, charts, graphs, multimedia and, eventually, communicate research findings in physics, using scientific writing. In addition, the learner develops a critical awareness of effective collaboration and communication, learning to appreciate scientific study and creativity, within a global context, through stimulating and challenging opportunities.

Are there any differences between SL and HL?

The Standard Level (SL) course ensures that students are adequately exposed to the discipline that they might otherwise opt out of, and the Higher Level (HL) courses allow students with a deep interest in physics, to spend more time with the discipline, by exploring options in addition to the SL core curriculum. The physics SL course is recommended a minimum of 150 hours and the physics HL course is recommended a minimum of 240 hours of instructional time.

What are the key features of the DP physics curriculum?

The DP physics curriculum covers the breadth of all the fields ranging from Mechanics, Thermal physics, Waves, Electricity and magnetism, Circular motion and gravitation to Atomic, nuclear and particle physics. Physics students at SL and HL undertake a common core syllabus but students at HL are required to study the options and some topics as well as some additional topics as the curriculum delves in depth here. An exemplar topic under HL would be thin-film interference and matter-waves. The distinction between SL and HL is one of breadth and depth.

How does assessment look like, in physics?

In DP physics, students are assessed both externally and internally. Physics students at SL and HL undertake a common internal assessment (IA) scheme. In this scheme, practical approaches to the course delivery are emphasised through interdisciplinary projects, along with short-term and long-term experiments and investigations. Internal assessment is assessed through a single individual investigation. Student work is internally assessed by the teacher and externally moderated by the IB. The external assessment of physics consists of three written papers which include multiple-choice, short-answer and extended-response questions. The weighting is 80 percent for the external assessment and 20 percent for the internal assessment.

How will the DP physics course help me, later in my career and life?

The DP physics course prepares students both professionally and academically, building intellectual foundations by fostering attitudes and qualities of the mind to allow students to become lifelong learners. The course eliminates the “academic versus practical” divide plaguing most other courses. Physics is a fundamental science and students who go on to pursue a college course in physics have career options ranging from research and development, engineering and technology, space and astronomy, healthcare to energy and geophysics.