

# IB Physics - Higher Level

11<sup>th</sup> Grade Intl. [5 periods per week]

Ms. Angela Campbell

## Course Description

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IB Physics is a lab-based course of instruction designed to prepare students for the introductory level of physics at a university. The higher level of the course is intended for students who wish to pursue advanced studies in science, such as engineering or a degree in physics. The topics covered are the same as the ones in the standard level core, with the addition of more in-depth treatment of four topics. The core topics include:

Measurement and Uncertainty

Circular Motion and Gravitation (and Fields for HL)

Mechanics

Atomic, Nuclear, and Particle Physics (and

Thermal Physics

Quantum and Nuclear Physics for HL)

Waves (and Wave Phenomena for HL)

Energy Production

Electricity and Magnetism (and Electromagnetic

Induction for HL)

Plus one optional topic (one of Relativity, Engineering Physics, Imaging, or Astrophysics).

The first 6 topics are covered in year 1. Year 2 covers the rest, including an Internal Assessment which is an investigation that is designed and conducted by the individual student.

From the Physics Guide:

“It is important that students are involved in an inquiry-based practical programme that allows for the development of scientific inquiry. It is not enough for students just to be able to follow directions and to simply replicate a given experimental procedure; they must be provided with the opportunity for genuine inquiry. Developing scientific inquiry skills will give students the ability to construct an explanation based on reliable evidence and logical reasoning. Once developed, these higher order thinking skills will enable students to be lifelong learners and scientifically literate.” (page 22)

## Timeline

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As noted above, the first six topics are covered in units lasting 4-8 weeks each during the first year. The other two topics, the option, and the internal assessment are completed in the second year, with several months remaining for review and practice before the IB exam. Each unit includes laboratory investigations that are required by the IB and that are designed to enhance the understanding of the topic as well as build lab skills.