

## ■ IB HL Physics

### **Introduction**

As the most fundamental of the sciences, physics incorporates a range of topics that allow the students to study scales from the microscopic to the macroscopic. It attempts to explain observations from the natural and physical world in terms of laws and theories relating to matter and energy. Students will also discover some of the important historical discoveries and the international aspects of the subject. It is designed to give a holistic view of physics and help to see the relevance of the subject in our rapidly changing world. This is achieved through theory, practical investigations and student research. This includes the 'Group 4 Project' in collaboration with those studying biology, chemistry and design technology. Investigative, research, numerical and conceptual skills will be challenged throughout. This course gives the students a good foundation for a wide range of university courses including medicine, engineering and the physical sciences.

### **Content**

The core at higher level comprises the following topics.

1. Physics and measurements - basic measurements and units
2. Mechanics - physics of movement
3. Thermal physics - effects of Temperature
4. Oscillations and waves - vibrations and waves
5. Electrical charge and current - basic circuit electricity
6. Fields and forces - gravity, electricity and magnetism
7. Atomic and nuclear physics - radioactive materials
8. Global environmental physics - energy production and implications
9. Motion in fields - movement in gravitational and electric fields
10. Thermal physics - further study into temperature effects
11. Wave phenomena - more detailed wave effects
12. Electromagnetic induction - generating electricity
13. Quantum and nuclear Physics - quantum effects and in-depth nuclear physics
14. Digital technology - data capture and Storage

The options available are two from:

Astrophysics, Communications, Electromagnetic Waves, Relativity, Particle Physics

### **Assessment**

The course is examined through three written papers contributing a total of 76% of the final grade. The papers cover a range of multiple-choice, structured and extended response questions. The remaining 24% of the marks come from the investigative skills developed over the course and during the Group 4 project.