

Course Descriptions

Course Name: IB Physics SL

Course Number: SL1: SCI 6110 SL2: SCI 7120

Brief Course Overview:

IB Physics SL is a **two** year program that provides an exploration of the interaction between science knowledge, experimental science and the use of science in the world community. The IB Diploma Programme physics course exposes students to the most fundamental experimental science, which seeks to explain the universe itself—from the very smallest particles to the vast distances between galaxies. Students develop traditional practical skills and techniques through lab work while also developing their math skills through analysis and theoretical application. Throughout this challenging college level course, students become aware of how scientists work and communicate their ideas to the world, as well as discuss current work being done and the ethics or politics that drive science.

Questions that will guide learning throughout the year include:

- What tools can be used to measure and explain the relationships we examine?
- What is the relationship between matter and energy in the universe?
- What is the process of science and how is it communicated?

All first year students are expected to participate in the required IB Group IV project, which typically occurs on a Saturday in the Spring.

This course is useful for students who want to go into a science, engineering, or architecture major at University. During the year 1 portion, students will work to develop their lab skills and complete one independent lab by the end of the year. This is to prepare for Year 2 where one of the students' two independent labs will be sent to the IB for grading.

This is a two-year IB course with required formal assessments and end-of-course exams. Students enrolled in AP and IB courses will be assessed a fee associated with each course to cover the cost of external examination.

Main Topics of Study:

Year 1

- Measurement and uncertainties
- Newtonian Motion (including circular motion)
- Thermal Energy
- Oscillations and waves

- Electrical circuits

Year 2

- E&M fields
- Particle Physics
- Power generation and Environmental Physics
- Astrophysics

What are the Enduring Understandings of the course?

- Provide opportunities for scientific study and creativity within a global context that will stimulate and challenge students
- Provide a body of knowledge, methods and techniques that characterize science and technology
- Enable students to apply and use a body of knowledge, methods and techniques that characterize science and technology
- Develop an ability to analyse, evaluate and synthesize scientific information
- Engender an awareness of the need for, and the value of, effective collaboration and communication during scientific activities

Prerequisites :

Language prerequisite: placement into College Prep English or IB English A or IB English B
Course Prerequisites: 90% or better in an honors-level science course with teacher recommendation and a math level of Algebra II or above.

Course Length: 2 year

Meets NBPS Graduation Requirement? Yes

Included in Bright Futures GPA calculation? Yes

Included in NBPS GPA? Yes

NCAA Core Class? Yes

State University Core Class? Yes