11 IB Physics (2024-2025)

Dr. Allen Davis
aldavis@isbos.org

Course Description

IB physics is a two-year course that serves as a broad overview of classical and modern physics topics. Students will develop the skills and techniques to explain the behavior of both the natural technological worlds. Mathematics is the language of physics, and students will gain proficiency in using mathematics to model predictions and observations. They will develop skills in reasoning, critical thinking, communication, and data collection & analysis. Our ultimate objective is to develop scientific literacy and the ability to communicate ideas and scientific arguments.

Curriculum Outline

All students, including standard level (SL) students will cover the core topics. Higher level (HL) students will also cover additional higher level topics.

All students in this course are continuing from last year. The exact order of topics is subject to change, but the ***rough*** plan is as follows:

Year 1 (2024-2025):

- Space, time, and motion
- The particulate nature of matter
- Wave behavior

Year 2 (2025-2026):

- Internal Assessment
- Fields
- Nuclear and quantum physics

Meeting Details

All students are expected to attend every class period unless I explicitly give permission otherwise. SL students will only be expected to participate in 60% of the class meetings on average. I will be in communication with SL students about which of the upcoming classes are pertinent to them.

SL students should expect a somewhat “front heavy” attendance in the class across the 2-year course, since core material is relevant to all students and is overrepresented in the first year of the course.

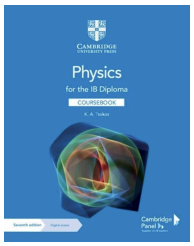
Class meetings take place at the following times:

Mondays: 1st period	Room 320
Tuesdays: 5th period	Room 320
Thursdays: 5th period	**Room 318**
Fridays: 4th & 5th period	Room 320

Materials

Students should bring the following to all classes.

- Paper and/or notebook for class notes
- Pens/pencils, eraser
- Laptop (e.g., chromebook) & charger
- Scientific calculator (TI-84 plus recommended)



Students should obtain this textbook. Bringing it to class is optional.

Tsokos, K.A., Physics for the IB Diploma, Cambridge University Press, 2014. ISBN 978-1107628199.

Once you purchase the textbook, you can use the code inside it to gain access to an online version, which you should bookmark on your computer for easy access.

Academic Honesty Policy

This course follows the policy described in the Code of Conduct, which students should have read and signed.

Collaboration during homework, class work, and lab work is welcome (unless stated otherwise). However, *all submitted work must reflect a student’s personal understanding* — copying another’s work or answer without attribution is prohibited.

The use of resources not explicitly permitted during a summative assessment (i.e., a quiz, test, or lab report) is prohibited.

All lab reports and the internal assessment **must be fully written in the Google doc that I provide**. This ensures that I have access to your revision history.

Students and teachers are happier and more productive when there is trust in the classroom. I expect students to keep our classroom culture healthy by protecting our shared trust in one another.

Generative AI Policy

Students are permitted to use ChatGPT or other generative AI software under the following circumstances. No permission or crediting is required when AI is used for reviewing concepts, generating practice problems, or brainstorming lab ideas. AI must be credited explicitly (in writing) if it is used to generate outlines of submitted written work, perform calculations in homeworks or labs*, suggest approaches to homework or lab problems, or if any text is directly placed into your submitted work (which must be quoted).

* Students are cautioned that *generative AI is often confidently incorrect*! It is dangerous to rely on it for specific facts or calculations; this is not what it was designed to do. Furthermore, students are discouraged from directly quoting AI in submitted writing (again, it must be cited if done).

If, having read this, you are considering using AI for something and it feels dishonest to do so, then **don't**. Feel free to ask if you'd like to use AI for something not covered here and we will discuss it.

Assessments

ISB Grade:

Students will be assigned a report card grade each semester based on their demonstrated achievement in mastering physics concepts and techniques., Their achievement will be evidenced by written and/or oral quizzes & tests, projects, and lab reports.

I will assign grades based on my professional judgment of how well students have achieved the learning objectives by the end of each semester. Grades are not based on my perception of a student's effort, initiative, intrinsic talent, etc. However, work ethic, curiosity, and engagement in the classroom are likely to help in developing physics mastery.

International Baccalaureate Organization (IBO) grade:

External assessment occurs in late April/May of the senior year. Two Examination Papers are taken by students, covering all the material studied

over the two-year course. In addition, students will conduct one original experimental investigation, which will factor into their IBO grade.

Expectations

Mastery of physics requires practice. This is the primary role of homework in this class. Students are expected to make a good-faith effort to complete the homework on-time, and to communicate with me if they expect to be unable to do so.

Students are invited to ask questions during lessons to address areas of confusion, or to schedule office hours with me. Students are expected to proactively seek extra help (e.g., office hours, other resources, new/different practice problems) if they feel like they are struggling.

Students are responsible for all course material missed during an absence. Students should communicate with me if they seek an exemption of this policy for whatever reason. All course material will still be covered by the IB external assessment, however.