

# Frequently Asked Questions

## What's the structure of the course?

Each unit of the course consists of a handout with about 30 problems and a 1 hour one-on-one meeting to discuss them. Your job is to solve as many of the problems as you can, while my job is to evaluate your solutions, show the intuition behind the problems, tell you the ideas behind the problems you didn't solve, and give occasional hints. You can attempt the units in any order or combination, though there is a suggested order. For a list of the units, see the [syllabus](#).

I will not spend much time introducing the material; if it's new to you, it'll be your job to learn it by reading books. Relevant textbook chapters will be listed in each problem set.

## When is the course?

The course will run from summer through March. The meetings each week will be arranged to fit your schedule. The month of March will be devoted to review and practice exams. If desired, students can continue through April and May to cover more advanced material.

## What's the cost?

Each unit costs \$200, broken up as \$100 for the handout and \$100 for the meeting. Usually students have one unit per week or, if busy, one unit every other week. If you prefer, you can also arrange for more or fewer meetings, such as two meetings for a particularly long handout or one meeting for two handouts. I usually prepare biweekly or monthly invoices, depending on preference. Payment can be via PayPal or bank transfer.

The core USAPhO material is covered in 24 units. The full curriculum, which covers everything in the IPhO syllabus, is 30 units long. It covers roughly the material of the first two years of an honors-level university physics degree, but with more difficult problems. Essentially all USAPhO problems, and the majority of IPhO and APhO problems ever written are included in the curriculum, along with problems from many other textbooks and Olympiads.

The reason the cost is higher than a generic prep program is two-fold. First, a very large amount of material is provided. The course is at least twice as intense as any other that I know of, with handouts totaling 300,000 words in length, containing 200 worked examples and 1,000 challenging problems with detailed solutions, along with 7 practice USAPhOs. It has enough content that I doubt anybody, even IPhO gold medalists, could run out of things to do. Second, all the teaching is done one-on-one, i.e. I'll spend the meeting time answering only your questions, and the explanations will be tailored to your background. I've experimented with other formats, but always found that one-on-one discussion is by far the most useful.

## How do you select the students?

Applications are closed for the 2020/2021 academic year. However, the requirements were the following:

- There is a [preliminary problem set](#) with a variety of basic problems. These problems should be approachable if you understand the core material in Halliday, Resnick, and Krane. Solve the problems and write up your solutions, as described in the syllabus.

- Along with your solutions, tell me about your past performance on the  $F = ma$  and USAPhO exams, your goals for the training, and where you've learned physics from.

This problem set is similar in style to problem sets in the course, though more basic, so by doing it you'll also find out if you'll enjoy the course. Feel free to email me for clarifications or hints!

### **How have previous students performed?**

I'll list the performances of my students before and after training. For the 2017/2018 academic year I had two students, whose progress was:

- USAPhO Gold  $\rightarrow$  USAPhO Camp, IPhO Gold (2018/2019 TA)
- Did not qualify  $\rightarrow$  USAPhO Camp

For the 2018/2019 academic year I had four students, whose progress was:

- USAPhO Camp  $\rightarrow$  USAPhO Camp, IPhO Gold (2019/2020 TA)
- USAPhO Gold  $\rightarrow$  USAPhO Gold
- USAPhO Bronze  $\rightarrow$  USAPhO Silver
- USAPhO qualification  $\rightarrow$  USAPhO Gold

For the 2019/2020 academic year I had eight students, but the USAPhO was not graded.

### **How difficult are the problems?**

See the two sample problem sets on [my website](#). These are representative in difficulty and length.

### **What other things can I do to prepare?**

See my [advice on learning introductory physics](#) for more references. If you've qualified for USAPhO but haven't gotten at least a USAPhO silver medal yet, two very good and accessible resources are Halliday, Resnick, and Krane and the Art of Problem Solving PhysicsWOOT program. For other tutoring, I can refer you to some of my past students.