AP Physics – Expectations

Interview with Steven Chu, Nobel Prize winner in physics conducted by Phil Pence:

Pence Professor Chu, what attracted you to physics in the first place?



Steven Chu: Well, that's a good question. It's a variety of things. First I was blessed. I had a terrific high school

physics teacher, and it was in public school in Garden City, Long Island, New York, and I had physics as a junior, and then had Advanced Placement physics as a senior. It was absolutely wonderful, in fact, nationally recognized. I grew up in a science background. My older brother was at that time majoring in physics in college. And then there was the inherent simplicity and beautifulness of physics that - that's not really a word--but it's a sort of thing where you can take nature and you describe nature in terms of mathematical models. And the mathematical models allow you to reach far-reaching conclusions, and you can test these conclusions by going back in the lab. The whole structure of making progress in this way seems so appealing.

The News Hour with Jim Lehrer, Oct. 15, 1997

Purpose for Physics: This is from the London Times, 22 Sep 2000. A story titled "Dope On A Rope".

According to the Times of London, in May of this year a 22-year-old American man died during an attempt to bungee jump between the Stechelbert and Schilthorn mountains in Bernese, Oberland. Traveling with a group on an event organized by travel company "Adventure World" (a company that has seen, by the way, over 22 of their customers die during events they've hosted during the past year) the young man failed to "bounce back" from his jump, as expected. The problem? The young man simply never reached the end of his rope. Investigators who inspected the rope found it in perfect condition. "The enthusiastic jumper had attached himself to a cord that was 540 feet long but the distance between him and the parking lot where he landed was only 300 feet. And you kids out there think you'll never need to know 'physics' in the real world..."

Background: What the heck is this AP Physics thing? Is it like really hard or is it just more of regular physics or what? Good questions. To help answer them, the Physics Kahuna provides the following information direct from the Advanced Placement Program run by the College Board (whose noble motto is "educational excellence for all students".)

The Advanced Placement (AP) Program provides an opportunity for secondary school students to pursue and receive credit for college-level course work completed at the secondary school level. The AP, sponsored by the College Board, is based on the premise that college-level material can be taught successfully to able and academically advanced secondary school students.

You guys are, of course, the "able and academically advanced secondary school students". Makes you feel proud, don't it?

The Advanced Placement Course Description in Physics, published by the College Board, covers the equivalent of a one-year algebra-based physics course (physics B)... based on surveys of instructors teaching the corresponding college courses.

So there you have it.

AP Physics B: The AP Physics B curriculum covers the following topics:

Newtonian mechanics Electricity and magnetism Waves and sound Thermal physics Fluid mechanics Light and optics Atomic and nuclear physics

AP Test: In the spring the AP Physics B test will be given. This is a standardized test that is made up of two parts; multiple choice questions and free response questions. The free response questions will require you to solve problems, answer questions, and show off your knowledge. The test is three hours in length and is equally divided between the two sections. There will be 70 multiple choice questions (with an hour and a half to answer them). The free response section will have between 6 and 8 questions.

During the year, the Physics Kahuna will provide you with sample test questions and review test taking strategies.

Several review sessions will be held as the test approaches.

The possible scores on the test are: 5, 4, 3, 2 or 1. The 5 is the best. A 3 or above is what you must establish as a goal. In general, a score of a 3 or better is what will get you up to 8 hours of college credit.

AP Website: A lot of information is available from the good College Board folks at the following website:

www.collegeboard.org/ap

You can find sample problems and questions, plus info on the curriculum, the test, grading, etc.

Words of Wisdom: AP Physics is a challenging course. It will move very fast and go into things really deep. You must keep up with the class. Not only that, but it is a serial course. Stuff we do in the first week will show up in week 18 and so on. So you must master the material and keep it in an active area of your brain's hard-drive.

Do the homework - really do it. Study the material and master it.

The Physics Kahuna recommends that you form study groups and work together to prepare for tests and things.

Rules: Behave yourself.

Easy A: Anyone scoring a 3 or better on the AP test will get an A in the course for the second semester.

Tests: The tests will be really hard. The Physics Kahuna may have to grade things on a curve. (Hey, just like they do in college!)

Grades: Grades will be made up and weighted in the following manner:

Tests	100	points
Labs	50	points
Homework	25	points
Quizzes	50	points



PHYSICS

INSTITUTE

TIME

TEMP

Late Work: Late work is strongly discouraged. Anything late will be counted at half its value. After two weeks past the due date, late work will not be accepted at all.

Required Materials:

- You will need a dedicated physics notebook a standard sized three-ring binder in which to keep materials within especially your old work. Get a really *big* binder.
- You will need a scientific calculator or graphing calculator. Just make sure that it has all the standard trigonometry functions.

Physics Kahuna: The Physics Kahuna has had a varied background. He delivered telegrams for Western Union, marked fields for crop dusters, fried hamburgers for McDonalds, toured with Hank Williams as a member of the Drifting Cowboys, and served in the Navy for 24 years.

He learned about physics when he went to Purdue and majored in nuclear engineering. He is now convinced that if <u>he</u> could get through college studying this stuff, <u>anybody</u> can do the same. This includes you. Thus, he will not be sympathetic to your wretched excuses.

Missed Labs: If you are absent the day a lab is done, you will have two weeks to make it up. You will be allowed to miss one lab which you will not have to make up per semester.

Excused Absences: If you are legitimately absent, it will be your responsibility to find out and make up what you missed. If you were absent the day an assignment was due, the Physics Kahuna will expect you to hand it in when you next return to class. Other missed assignments will be made up according to the CCHS regulations - you get two <u>calendar</u> days to make up work for every day you missed.



Unusual Requirements: Let

the Physics Kahuna know if you have any unusual requirements - if you need to sit in a certain area (near the chalkboard for example), if you need any special consideration, etc. The only reason that this class exists and the Physics Kahuna has this job is for you to learn physics. Don't hesitate to bring to the Kahuna's attention anything that would help you to learn physics better. All will be kept in the strictest confidence.

Getting Help: The Physics Kahuna will be on patrol in the lab for rescue missions on most days from about 0700 in the morning till school begins. He is usually in the room during the lunch period and will entertain your questions and solve your personal problems at that time. It is a rule of the sea that survivors from a sinking vessel be given assistance, therefore, rest assured that the Physics Kahuna will always drop what he doing to come to your aid. So, if you get behind, get lost, get confused, want to show off, or need assistance with the realization of your self worth come and see him. The earlier the better.



Homework and Grades: The Physics Kahuna has deliberated on this and has set the course up with two grading options – with or without homework. You get to choose.

Choose wisely.

The no homework thing sounds like a good deal. Who likes doing homework? This option is ideal for the student who is a semi-genius and who learns things very easily and is always thinking, "why should my grade depend on a bunch of homework when I can ace all the tests." That person can take the course with the no homework option and have the old grade depend on test scores, lab reports, quizzes, and projects.

Regular non-genius types should consider taking the course with the homework option. Why? Well, because there will be a lot of points of homework through the year and you can build up a big fat cushion. This way, see, if you have trouble with a test or something and do lousy on it, you can be saved by the homework.

Once you decide, you're committed for the whole semester and cannot change your mind or go the other way.

So choose wisely.

Should you choose the homework option, there will be a ton of homework – just about every class day will see a fat old bunch of homework. The Physics Kahuna knows that you will studiously do the homework. The homework will be picked up (immediately at the beginning of class) and looked at. Satisfactory completion (i.e., a legitimate effort at each question) will provide you with 50 points. This means that you have followed the problem solving format and developed a logical problem solution. If you haven't done all the problems, shown your work, or made a legitimate attempt to solve the problem (just wrote some stuff to fill space) you get zero pt zero points. This means that if *even one problem is not done*, you get *no points*! So do the dad-blamed homework!

Commonly Asked Physics Questions:

- Is it true what they say about Dixie?
- Can a phly walk on the ceiling?
- Is it goofy to spell things using "ph" for "f"?
- What's the deal with Little Bo Peep and her sheep? The Physics Kahuna is sorry, but in these enlightened times, what people do in their private lives is their own business and none of your concern.

Negative.

Affirmative, but it's a lot of phun.

Affirmative.

- If I have trouble and come and see the Physics Kahuna for help, will he help me? *Affirmative*.
- Will there ever be another Batman movie? *Good question. The Physics Kahuna hopes not.*
- Are women being shortchanged by science courses like this one? Negative.
- Why did the school district hire the "Physics Kahuna" instead of someone competent? *The Physics Kahuna used his psychic powers to suppress the normally discerning job applicant evaluative ability of the district-hiring administrators.*
- Does the Physics Kahuna play favorites? *Yes, all physics students are his favorites and will receive special treatment.*
- Does the Physics Kahuna care if I learn physics? Affirmative.
- Will I be expected to participate in class and make a fool of myself in front of everyone? *Yes, if the Physics Kahuna has to do these things, you do too!*
- Will I have to perform crazy stunts, thinly disguised as "physics demonstrations"? *Affirmative*.
- Did the Physics Kahuna really tour with Hank Williams? Not really. That was a rather feeble joke. Hank died in 1953 when the Physics Kahuna was a wee lad of six.
- What is the greenhouse effect? *Good question*.
- Will my mom and dad be proud of me for taking physics II? <u>What?</u> <u>You mean they aren't</u> <u>proud of you already?</u>
- Will the Physics Kahuna waste valuable academic class time with stupid Navy stories. *There may not be time, what do you think?*
- Will the class be boring and academic? *Of course! We're talking about the public school system for crying out loud!*
- Does "AP" stand for "average person"? *Negative*
- Is rock'n'roll music responsible for the decay and ruination of America? *Most likely.*
- Will I get in trouble if I don't keep up? *Affirmative*.
- Will AP Physics make me a better person? *Of course.*
- Is the cold war over? *Negative*.
- Is it better to be a grand opera singer or a Grand Old Opry singer? *The latter.*
- Does the early bird get the worm? *Not in Wyoming*.