



Principals' Training Center  
*PTCnet Survey Summary*

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<b>Topic</b>	Science Curriculum
<b>Query</b>	<p>Science is in year 5 of our Curriculum review cycle and in preparation for next year we are looking at various options for the Science courses in grades 9/10. At the moment we run four semester courses of Earth Science, Biology Chemistry and Physics but have found various drawbacks with this system, and we would like to explore alternatives.</p> <p>Just curious: How do you organize your 9/10 courses, What do you offer Are they "pre-IB courses Do any of your students do IB science as anticipated in grade 11?</p>
<b>Date</b>	October 2012
<b>Query submitted and collated by</b>	Tony Mobbs, Curriculum Coordinator, International School of Prague
<b>Total number of responses</b>	22

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**Individual responses**

**US Science Courses in other schools 15/10/12**

<b>School</b>	<b>How do you organize your 9/10 courses?</b>	<b>What do you offer? Are they "pre-IB courses?"</b>	<b>Do any of your students do IB science as anticipated in grade 11?</b>	<b>Notes</b>
<b>ICS Addis Ababa Ethiopia</b>	G9 Biology (mandatory)--1 year Chemistry and Physics are also 1 year courses which can be taken in either G9 or 10; in G10 one of these must be chosen. Most of our students choose to do all 3 sciences in 9 and 10 (replacing one other 'elective')	Yes, but without the nomenclature.	No, we eliminated the last vestige of this practice a couple of years ago: all our DP courses are now two years (accelerated languages students being the occasional exception).	We're looking into trimesters or semesters in G9-10, to give everyone equal exposure to all 3 'hard sciences' and earth science. . .as now, no earth science except in G8.

<p><b>The Village School 2005 Gentryside Houston</b></p>	<p>Texas requires Biology for graduation. This becomes an issue due to the IB Program. A student may study Physics in 9th, Chemistry in 10th, and then decide to do Physics or Chem in the IB, thus, studying no Biology.</p>	<p>We are located in the energy corridor of Houston, so we have an inordinately amount of students interested in studying engineering, science and medicine. Since many of these students will study double science as part of their IB program, they want to study each one before having to decide on which to focus in the IB. Thus, many of our students double-up in 9th or 10th grade so they get a chance to study all three.</p> <p>All of our science courses are considered pre-IB. We've begun discussions about adopting the IGCSE, but these are only in the beginning at this point.</p>	<p>None of our students write the IB exam as Anticipated Candidates</p>	<p>What are the drawbacks to your four semester program? State universities in Texas require a semester of Economics and Speech/Debate. We also feel the need to add a Health requirement. If we do these, there is no room for the Arts. So, we are feeling constrained for a couple of reasons. I feel a four-semester option would help address these constraints.</p>
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<b>AIS-Riyadh</b>	New Integrated science in grade 9 last year and in grade 10 this year. This allows our students to learn all strands in preparation for multiple IB Science courses (very common here)		All of our HS courses are IB courses and we offer Chem, Bio and Physics.	
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<b>Anglo-American School of Sofia</b>	1 tri Chem, 1 tri Bio, 1 tri Physics for grade 9 and 10. Yes they are pre-IB.			Currently all of our students go from grade 10 into our IB science courses. We offer three -- physics, biology and chemistry.
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<b>ISLuxembourg</b>	We run IGCSE sciences - double award for more able kids, single award for less able.	Both course cover bio, chem and physics in equal measure. Currently about 75% take the more challenging double award and are expected to have the option/ability to follow two sciences at IB. The single award is more suitable for those planning on taking one SL science at IB.	no	
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<b>American School of Dubai</b>	We currently run integrated physics and chemistry for all grade 9, but are looking to do away with this course and likely replacing with Earth Science and allowing choice between the Earth science and Biology. Then in grade 10 students would take either Bio or Chem or both			The physics teacher feels that with the proper math background and lab skills developed from the other science courses, there is not a need for physics in the earlier years.
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<b>AAS Moscow</b>	We have just reconfigured science 9/10. We used to offer Env. Systems and Bio in grade 9 and then Chem and Physics in grade 10. These are all semestered. We have adopted AERO standards and we have dropped the Env. system class and incorporated it into Chem and Bio.			For grades 9 and 10, students can take Bio 1, chem, 1 or Physics 1 these are mixed classes with 9/10. The curriculum needs to be accessible for both grade levels- it is doable with the right coaching with teachers. The fourth course they can take is Bio 2, chem 2 or Physics 2, depending on what they would like to take in IB.
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<b>IS Krakow</b>	We offer Bio in Grade 9 (5 periods a week), and both Chem and Phys in Grade 10 (5 periods each, total of 10 out of 40 lesson). It leaves room for almost no electives in Grade 10, but it allows students to have the full choice of Group 4 electives for IB.	They are not specifically pre-IB courses.	At the moment, we do not plan to offer any anticipated courses in Grade 11.	
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<b>The KAUST School</b>	9th: Earth Science 10th: Physics/Chem (Semester Courses)	We run the PYP, MYP and DP		
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<b>Qatar Academy</b>	Qatar Academy uses an integrated Sciences model in all MYP years. Each unit usually has a focus rooted in one of the sciences, but each science is brought in to play as part of the unit.			All our students take the DP in grades 11 and 12, and all have the same Sciences preparation in the MYP. It's working well.
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<b>International School of Kenya</b>	Gr. 9: Integrated Science (some physics, bio, chem and environmental science) Gr. 10: Students choose between Conceptual Physics, Gen. Chem, Bio or Earth/Space Science. The Bio is really the first year of IB but kids can take it just as a bio course as well.	All courses can be considered pre-IB but we encourage students to take a different science in gr. 10 than they will do for IB so their 'resume' is more varied in the sciences.		All kids do Science in gr. 11 - those who don't do the IB can do the semester EArth/Space Science
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<b>AIS Hong Kong</b>	<p>Hi Tony, we are a US Standards based curriculum and offer AP courses at the top end of the school. Students study integrated science courses to build up their foundational understandings through G9 and G10 with honors and AP courses available in specialized sciences in G11 and G12. The integrated courses help students to be prepared to take on one science in G11 and be able to take another, different science in G12 (both at advanced level). We were concerned that without these foundation courses in all 4 (Environmental, Physics, Bio &amp; Chem) sciences students would lack a broad coverage before specializing. If students are extremely strong in G9 they could accelerate through to the honors course in G10 meaning that they could take AP sciences in G11. A large % of our student body take 5 or even 6 science courses at high school (requirement is 4 courses).</p>			
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<b>Taipei American School</b>	We do Physics First in the upper school. Grade 9 Physics, Grade 10 Chemistry and Grade 11 Biology. Specifically for grade 9 and 10 we offer Conceptual Physics (for those 'got so great' science students), Regular Physics and Honors Physics. The same is true for grade 10 Chemistry. We offer both IB and AP so our offerings in grade 11 and 12 reflect this. Good luck,			We offer both IB and AP so our offerings in grade 11 and 12 reflect this. Good luck,
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<p><b>International School Manila</b></p>	<p>Grade 9 – All students take integrated science (with Bio/Phys/Chem woven into each unit of work)  Grade 10 – students can opt to continue with integrated Science or take 1 or 2 individual sciences (Bio/Phys/Chem).  The students who take the individual sciences are better prepped for their HL science(s) in grade 11/12, but it is not a pre-requisite - if a student performs particularly well Int. Sc. 10, then they can still go on the take sciences at HL for IB</p>	<p>a. Grade 9 – Integrated Science  b. Grade 10 – Integrated Science, Biol, Phys, Chem  c. Grade 11 - Biol, Phys, Chem, ESS, Sports Sci, Comp Sci (since its move to group 4 this year)  I suppose the Grade 10 individual science course could be considered “pre-IB”, but not really</p>	<p>Anticipated - No – apart from one unusual case this year who entered in G11 after completing one year of IB Chem at his last school – but generally, no.</p>	
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<b>Graded, Sao Paulo, Brazil</b>	We currently offer biology in grade 9 and chemistry in grade 10. Next year we will switch to integrated science in 9 with the following year in both 9 and 10. The courses will not be pre-IB but the idea is to prepare students for any of the IB sciences. We are looking at using <u>Educhange</u> for our curriculum.		We do not and don't plan to offer any science courses as anticipated in 11.	
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<b>ATLANTA INTERNATIONAL SCHOOL</b>	6,7 mixed science on a trimester basis. 8, 9, 10 a trimester of Physics, Chem and Bio (three different teachers)			Have a lot to feedback about that model and wouldn't recommend it necessarily. Give me a call if you want to chat about our model at all.  Options block being added next year to offer elective science classes. In process of getting the curriculum and course titles tied down.
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<b>ISNice</b>	We have class sizes between 30-42 students. Our students do not follow a pre-IB as our students take one to two IGCSE science exams at the end of grade 10. We prepare them for the IB in this way. This what we have come up- it is a bit out of the box: in 9th grade all students take 3 40min periods of bio, chem, and physics. So 9 periods in total. In 10th grade they specialized in either bio or physics, and they may take a second science, chem, if they choose.	in 11th grade they may take either of the three sciences, and we offer Environmental Systems and Societies, so not all students go on to take a pure science.		This is our second year of running this, and we are pretty happy with it. We like the idea that we can educate them all in the three sciences in high school, and still go on to cover more advanced material in a subject of their choice.
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<p><b>American Embassy School New Delhi</b></p>	<p><u>9th grade</u> Biology 1 (yearlong) General Biology -mainly for EAL students), yearlong</p> <p><u>10th grade:</u> Chemistry 1 (yearlong), Physics 1 (same program as IBSL Physics Yr 1) - yearlong. Students have the option to choose both (Chemistry 1 and Physics 1)...will usually only be a few Intro Chem/Phys course at a lower level (which does not give access to IBHL science courses)</p> <p>So, we have two solid science courses in place, but physics 10th grade will only be chosen by students who have an interest in pursuing it further in 11th and possibly 12th grade.</p> <p>The science department is investigating moving away from this system:</p>	<p><b>Rationale:</b> Over the years, some department members expressed the need for a higher level Intro Chemistry/Physics course, to serve the IB Chemistry and IB Physics students better. It felt awkward to some department members that students can finish high school, without having had all three sciences (Physics, Chemistry, Biology) Research has shown that science course sequencing makes a difference: Physics--&gt; Chemistry --&gt; Biology is the sequence in which students build most upon skills and concepts learned in preceding science courses Doubling sciences in 10th grade can be avoided. The lower level ICP class does not provide enough stimulans for students to perform well.</p>	<p>Yes, we do offer the opportunity to advance IB courses (IBSL Physics Yr 1 in 10th grade)</p>	<p>I will lay out the 9th and 10th grade science courses in place at AES and the drawbacks we have identified. At the same time, if you don't mind, I would like to ask if you are willing to share with us the drawbacks you have identified for the semester science courses at ISP. At this point in time, the high school science teachers are also exploring alternatives for the courses we offer in 9th and 10th grade.</p> <p><u>9th grade:</u> Semester 1: Physics; Semester 2: Chemistry</p> <p><u>10th grade:</u> Semester 3: Biology; Semester 4: Earth Science/ Environmental Science</p> <p><b>Rationale:</b> These courses would serve as pre-IB courses Give students a chance to experience Physics, which they did not have before. Would give students an opportunity to make a better judgement which IB</p>
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				science course to choose.
<b>AISSRotterdam</b>	<p>Our middle school students have each strand (as you mention) for one quarter. Our 8th grade social studies course is called "Global Issues" in which they explore various Earth Science topics. Then once in grade 9 they take a full year of Biology and in 10th grade a full year of Chemistry. Physics is not offered in high school but we have many students who take IB Physics and feel prepared based on their proficiency in mathematics. They are "pre-IB" courses in the sense that they are meant to ensure a student could take either Bio, Chem or Physics at the IB level but they are not officially labeled "Pre-IB" courses. <b>One of the main reasons for the full-year Bio and Chem courses is so that are US students can transfer back more easily since many US schools want a full-year Science credit and not an integrated approach.</b></p>			<p>We are also beginning to review our Science though (especially as we get elementary students coming up from IPC and now middle school with IMYC) so this may change in the future</p>

<b>Pan American School of Bahia</b>	Grade 9 = Physics since it is required for graduation for our Brazilian students and we offer IB Bio in grade 11 Grade 10 = Chemistry		Grade 11 = IB Biology / Environmental Science Grade 12 = IB Biology / AP Environmental Science	
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<b>French American school</b>	Our students take the three sciences every year, starting in grade 7. Grades 7,8 and 9: 2h of bio and 2h of phys/chem Grade 10: 2h of bio, 2h of physics and 2h of chemistry.	We call it pre-IB program, in fact it is inspired from the French system. We think it works very well, and teaching the sciences simultaneously enables so many connections between them, giving a whole picture to our students.		
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<b>ISBangkok</b>	Grades 9 and 10 have equal time allocation for Biology, Chemistry and Physics	There is no "pre-IB" program in 9 and 10 as we hopefully designed a program with adequate rigour to prepare all students for IB.	We also have a well defined Independent Research Program in which all students engage in research twice each year, along with the typical inquiry labs.	Attached is our curriculum program for your perusal. We relied heavily on IGCSE, Singapore, and Ontario curricula for our model.
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[Chemistry](#)

[Physics](#)

[Science - Combined](#)

[Sciences - Co-ordinated \(Double\)](#)

### Twenty-First Century Science

Cambridge IGCSE Twenty-First Century Science adapts the successful GCSE Twenty-First Century Science and makes it available internationally for the first time. It is based on a curriculum model for science that offers flexibility and genuine choice. Cambridge IGCSE Twenty-First Century Science meets the needs of learners who are not traditional scientists, but who would like to follow a course which emphasises the development of scientific literacy, enabling learners to make sense of the science they come across in every day life.