

BTB Guidelines for Science Labs

Because science remains the academic strong suit and backbone of our homeschooling co-op, at BTB we aim to ensure that our science labs are rigorous, engaging, and offer the very best learning atmosphere for our students. We strongly encourage full student participation and responsibility. We aim to enrich the learning that is taking place at home and ease the burden some parents may have in conducting experiments at home, etc.

We encourage our *teachers* to:

- Have knowledge and/or mastery of the material that will be covered in their lab.
- Create a syllabus that includes reading assignments and schedule of experiments and activities to be done in class. Parents and students should be made aware of any changes that are made as the year rolls on. Teachers should try to complete every experiment in the text book during class whenever possible (as indicated in the syllabus)--this way when activities are skipped or when an alternative experiment is conducted, parents can adjust accordingly at home if desired.
- Offer a hands-on experience for our students; for experiments students should work in pairs at all possible times. This creates a stimulating atmosphere of lots of doing, not just watching or listening. Studies consistently show that students who actually perform an activity retain information about that activity much better than those who only listen to an explanation of it or watch it being done.
- Use class time wisely. When the day's experiments do not take the full class period, extra learning activities would be appropriate and encouraged, such as games, videos, extra experiments, worksheets to promote open discussion, etc. Consider having students complete their laboratory notebook assignments during class time when possible.

We encourage our *parents* to:

- Make sure their students are characterized by coming to class prepared. This means students should have read assigned text material and completed any homework. Everyone benefits in a class/lab where students understand and can discuss what they're learning.
- Understand that simply attending the lab (32 contact hours) does *not* warrant a credit of high school science under Kentucky statutes. One high school credit is equal to 120 hours of in-class time during the academic year. Parents should be taking an active role in grading homework and examinations. Though our program does not issue official grades, parents should feel free to discuss with teachers in advance the options to offer feedback, scoring, or grades on laboratory notebooks.
- Seek outside tutoring help or online resources such as Khan Academy in the event your student is struggling to comprehend the material. Some students would greatly benefit from remedial math tutoring as well.
- Carefully consider the pre-requisite demands regarding upper level science classes. In other words mastery of certain math skills and previous science knowledge are necessary in order for your student to advance. Any exception should be rare as this is not in the best interest of the student or the lab in general.
- Work closely with the teacher on those rare occasions when your student is permitted to audit a lab. Teacher, parent, and student would need to have a clear understanding of the expectations of the situation. While a student who is not reading the material could benefit

from the lab activities, the students who do come prepared should not have their learning experience compromised. Non-participatory students may need to sit out during games, the conducting of experiments, etc., if their participation does not enhance the learning process. A lack of preparation, readiness, and ability on the part of the student may inhibit the class-wide goal to fulfill learning objectives and achieve learning outcomes. Some students who are not prepared tend to distract those who are. We would like to see a rigorous, engaging, and challenging academic atmosphere in our science labs.

The general sequence for Apologia science curricula (from www.apologia.com) is:

Here is our recommended timeline for science courses:

	Science	Math Prerequisite
7th grade	General Science	None
8th Grade	Physical Science	7th Grade math
Freshman	Biology	None
Sophomore	Chemistry	Algebra I
Junior	Physics	Algebra I, Geometry; basic Trigonometry functions
Senior	Advanced Biology	None
	OR Adv. Chemistry	Algebra II
	OR Adv. Physics	Pre-Calculus
	OR Marine Biology	None

- Your student's math level should drive this time line, especially if the student is science-oriented. When the student begins Algebra I, that's when Biology begins.