

Eighth grade Science 2019-20

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Goals

The eighth grade science course seeks to

- foster the expectation that science is involved in every aspect of life and help students recognize and explain in scientific terms the connections between familiar situations and what is taught in the classroom
- develop students' ability to effectively communicate scientific ideas verbally, graphically, and in writing
- teach students basic facts and principles in selected physical science topics
- demonstrate that science is something you do and something that changes, not a static body of knowledge
- develop confidence and competency in the practices of science
- provide each student with enough challenges and enough successes to facilitate steady development

In this class, concepts and information are largely introduced through the examination of phenomena from everyday life and developed through activities, investigations, and subsequent discussion. Instruction is informed by the Next Generation Science Standards, which intentionally weave science and engineering practices and over-arching concepts throughout the exploration of content areas. The standards are grounded in the practices used by real scientists and integrate naturally with my long-held belief that students must see science as relevant to their lives, that collaboration and communication are essential components of science, and that the emphasis of the curriculum should be on conceptual understanding, not merely the accumulation of factual information.

Our principle content areas this year will be energy, forces and motion, chemistry, including the chemical basis of metabolism, and waves. The emphasis is on doing science in its broadest sense, which includes not only designing and carrying out lab investigations and interpreting data, but also the practices of defining problems, engaging in argument from evidence, evaluating information, and using mathematical thinking. Developing confidence and competency in the practices of science is fundamental.

In eighth grade the material is more abstract compared to that covered in previous years, and, in addition, there is an expectation that students will be able to more independently recognize and develop connections between ideas. Simple cause and effect relationships begin to be replaced by multi-step, reasoned explanations, a process which is modeled throughout the course. Students are encouraged to anticipate the possibility of multiple responses to a problem and to ask questions themselves. The need to choose words carefully, in order to best express one's ideas and to foster clearer understanding, is stressed throughout.

It is also expected that students are now more able to organize their materials and review process. Students are expected to review and learn factual information as it is introduced in order to ensure that they get as much as possible out of subsequent lessons, where a firm grasp of the facts is needed to recognize and use ideas in new contexts.

As students are learning new material, a variety of formative assessments will be used to allow both the student and the teacher to monitor progress. This includes teacher observation during classroom activities as well as written responses.

Summative assessments are designed to check student progress in relation to established standards, which are shared with students as the unit develops. Summative assessment is largely done through quizzes and more extended assignments, including some lab investigations, but is also informed by classroom observation. Students who are disappointed with their results on an assessment will need to meet with me for extra help prior to doing a re-take to demonstrate their comprehension. Lab practices are continuously monitored throughout the year.

There is a final examination in June which affords students an opportunity to revisit the main ideas and information from the year and thereby to consolidate their understanding of the work they have done.

Supportive parental involvement is encouraged! I stress that active study is more effective than 'looking over the notes', and suggest that students could ask a parent to quiz them on the factual material after they have spent time reviewing. Many eighth graders still benefit from assistance in planning longer term projects. Now and then, your help may be needed to assist with simple experiments or activities. If your child has difficulty with an assignment, remind them to go back to handouts and other assignments, and ask questions to guide his/her thinking, rather than simply supplying answers. If necessary, encourage him/her to seek extra help. In keeping with the academic honesty policy, the work that the student brings to class should be his or her own, irrespective of whether it is being collected or graded.

Extra help is available most days at 11:06 am and after school at least once a week. Details are posted on the board and sent over the weekend by email. In addition, I am usually at school by 7:30 am and can often stay late.

Texts: (these support the curriculum, but, in reality, we do not use them very much. They can, however, be a helpful additional resource for students)

Sound and Light *Science Explorer*

Forces motion and Energy *Science Explorer*

Workbooks for selected topics from *Amplify Science* (these will be distributed at the start of the appropriate units)