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# PETERS TOWNSHIP MIDDLE SCHOOL

## COURSE SYLLABUS: SCIENCE 8

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### **Course Overview and Essential Skills**

During 8<sup>th</sup> grade, students will take an inquiry based approach as they utilize STEM and 21<sup>st</sup> century science skills to study eight different units that relate to real life. Students will gain knowledge needed to collect and express data in the scientific community during the measurement and metric system unit. In the weather unit students will learn how to predict and explain weather patterns. During the water and other resources unit, students will gather scientific data using probes and other related equipment to determine if the freshwater ecosystem behind the school is environmentally healthy. The interactions of life unit covers a range of topics including wetlands, and biotic and abiotic factors that affect the quality of the environment. Through the examination of the three physics units students will investigate laws of motion, work, and simple machines, as well as, characteristics of mechanical waves, sound, electromagnetic waves, and light. In the animal diversity unit students will be introduced to modern classification systems and unique animal characteristics.

Students will have many opportunities to engage with the process of science – to ask questions, collect and analyze data, and draw conclusions. Students will develop a set of problem solving skills that can be applied in many facets of life, in particular as an educated consumer of science. By participating in structured group activities, students will have opportunities to further develop cooperative group work and communication skills.

### **Course Textbook, Supplemental Resources and Required Materials**

Textbooks Used:

- Anderson, Michelle et al. (2017). *Earth and Space iScience*, Columbus: McGraw-Hill Education. ISBN: 978-0-07-677385-5
- Anderson, Michelle et al. (2017). *Life iScience*, Columbus: McGraw-Hill Education. ISBN: 978-0-07-677284-1
- Anderson, Michelle et al. (2017). *Physical iScience*, Columbus: McGraw-Hill Education. ISBN: 978-0-07-677305-3

Required Materials:

- Binder, notebook paper, writing utensils, calculator

### **Course Outline of Material Covered:**

<b>Unit or Topic</b>	<b>Course Activities/Resources</b>	<b>Timeframe</b>
Measurement & the Metric System	Length lab, mass lab, volume lab, Gummy Bear lab, measurement & metric test	2.5 weeks
Weather	Cloud in bottle lab, hail lab, air pressure demos, weather test, weather map analysis, weather map quiz	3.5 weeks
Water and Other Resources	pH lab, water health tests, macroinvertebrate collection and classification, macroinvertebrate and water quality test, soil pH lab, soil testing, UV beads and nail polish activity, outdoor site conclusion,	7 weeks

	Pennsylvania's Mighty Susquehanna activity, 6 ways to the sea activity, wetland stations, wetlands & watersheds test, alternative energy video, renewable & nonrenewable resources test	
Interactions of Life	Pond water web activity, biomes video, Kaibab deer and deer - wolf graphing activities, ecosystems & their interactions test, Biosphere 2 video, environmental health test, Bug mobile video, integrated pest management research project	3 weeks
Motion and Forces	Speed lab, acceleration lab, Newton's laws stations, conservation of momentum simulation, friction lab, simple machine activities, virtual lab activities, motion test, forces test	7 weeks
Energy	Energy transformation activity, pendulum lab, roller coaster project, energy quiz, conservation of energy virtual lab	3 weeks
Waves, Sound, and Light	Wave demos, ball bounce lab, waves test, sound stations, changing pitch lab, sound test, NASA electromagnetic spectrum video, electromagnetic spectrum test, mirror and lens activities, light test	7 weeks
Animal Diversity	living or nonliving stations, dichotomous key activities, classification test	3 weeks

**\*\*A 20 point cumulative quarterly quiz will be given at the end of each 9 weeks.\*\***

***\*Depending on the needs of the class or changes in the school year, the course outline is subject to change.***