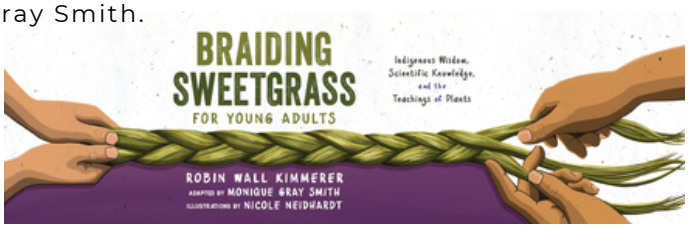
8th Grade Physical Science Syllabus 2023-2024 AIM Academy

Course Rationale:

AIM's 8th-grade Physical Science program focuses on building students' knowledge of science concepts as well as exploring the process of being a scientist. Students engage in the scientific method, hands-on experiences, and labs that utilize technology and traditional scientific instruments to deepen their scientific understanding. Students continue to work on general reading and writing development with a particular focus on disciplinary literacy skills and strategies.

In addition, the 8th grade travels to Jackson, Wyoming for a week to develop a broader environmental awareness while studying the Grand Teton ecosystem. Students have an opportunity to work on leadership and collaborative skill-building while in the field snowshoeing and cross-country skiing. They also read select chapters from *Braiding Sweetgrass for Young Adults* by Robin Wall Kimmerer and adapted by Monique Gray Smith.



- **Key Topics:** The Scientific Method, States of Matter, Physical and Chemical Properties, Atoms, The Periodic Table, Forms and Transfer of Energy, Energy in the Ecosystem, Electricity, Renewable and Nonrenewable Energy, Earth's Climate Past and Present, and Environmental Impacts of Climate Change
- **Overarching Themes:** Relationships between Differing Forces, Power & Change, and Stewardship
- **Critical Questions:** How can the study of science help us connect continuity and change? How can one explain the structure, properties, and interactions of matter? How has our idea of the atom changed? How do organisms interact with the living and nonliving environments to obtain matter and energy? How do environments, and their biotic factors, adapt over time? What happens to ecosystems when the environment changes? How do human activities impact the environment and natural resources?

Over the course of the school year, students will work on vocabulary, content-specific knowledge & the scientific method, text structure, discussion and investigation, scientific writing, and creative writing in an environment that supports each student's different learning style.

- **Vocabulary** will focus on breadth and depth, indirect and direct instruction, the precise use of content-specific words, morphology with a focus on scientific Latin and Greek prefixes, roots, and suffixes, multiple exposures and rehearsal, and building independent word learning skills.
- **Content Specific Knowledge & the Scientific Method** will focus on inquiry and asking questions, making observations, formulating hypotheses, researching background knowledge and evaluating other information sources, experimenting, analyzing data, and developing conclusions.
- **Text Structure** will focus on annotation skills, multiple slow readings of authentic science text, paired oral reading for practice with fluency and understanding, and decoding data, charts, and graphs.
- **Discussion and Investigation** will focus on asking "Why?", considering details, developing extensive questioning skills, conducting labs, analyzing evidence, proposing explanations, creating solutions, and strengthening collaboration skills.
- **Scientific Writing** will focus on incorporating scientific vocabulary, using exact wording and the passive voice, using a systematic framework, integrating and supporting conclusions with evidence and data, and incorporating writing skills being taught in ELA.
- **Creative Writing** will focus on using broader scientific concepts and vocabulary to create short stories, poetry, and mini-graphic novels while also incorporating creative writing skills being taught in ELA.