

Middle School Physical Science

Instructor

Dr. Kelly will be teaching Middle School Physical Science.

Required Materials

Student readings will be given in forms of pdfs, teacher created materials and an open source textbook.

Students will also be given access to online virtual simulations in addition to hands on labs.

Lab supply list is given to students one week before the semester begins.

A dedicated calculator for class. Students can use a phone calculator, but for some students it is often helpful to have a dedicated calculator for this course.

Prerequisite

Students should feel comfortable with fractions, decimals and integers. They must be able to solve two-step math problems.

Course Description

This middle school Physical Science course introduces students to the fundamental principles of physical science. Through hands-on experiments, interactive discussions, and real-world applications, students explore topics such as matter, energy, forces and motion, waves, electricity, magnetism, and the basics of chemistry and physics. The course encourages curiosity and critical thinking as students learn how scientific concepts explain everyday phenomena, from how objects move to how energy is transferred and transformed.

Students will develop essential scientific skills including observation, measurement, data analysis, problem-solving, and scientific communication. Emphasis is placed on inquiry-based learning, collaboration, and the use of the scientific method to investigate questions and draw evidence-based conclusions. By the end of the course, students will have a strong foundation in physical science concepts and a deeper understanding of how science and technology impact their lives and the world around them.

Grading

Assignments - 50%

Quizzes – 20%

Midterm Exam – 10%

Final Exam – 10%

Laboratory Reports/Worksheets – 10%

Assignments

Weekly assignments and worksheets will be given to students to help strengthen skills learned in class. These assignments will have similar problems to those done in class. These assignments will be in the form of practice problems, multiple choice questions, and/or written evaluation.

Quizzes and Exams

Students will have a quiz in most weeks of the course. These quizzes have unlimited attempts. This gives students the opportunity to have immediate feedback on what they are doing correctly in their calculations. Exams will be given in a paper format and returned to the instructor to be graded.

Class Schedule

The class schedule is pending until the week before the course starts. No topics will be removed, but order might change slightly.

Week	Topic
Semester 1	
Week 1	Scientific Method
Week 2	Introduction to Forces
Week 3	Force Diagrams
Week 4	Electrostatic and Gravitational Forces
Week 5	Calculating Force
Week 6	Magnets and Polarity
Week 7	Magnetic Fields and Introduction to Waves
Week 8	Properties of Waves
Week 9	Electromagnetic Spectrum
Week 10	Forces and Waves in Context
Week 11	States of Matter
Week 12	Properties of Matter
Week 13	Properties of Water: Density, Buoyancy and Surface Tension
Week 14	Calculating Density
Week 15	Introduction to Solutions
Week 16	Temperature and Solubility
Semester 2	
Week 1	Atoms, Mixtures and Compounds
Week 2	Physical and Chemical Properties
Week 3	Separating Mixtures
Week 4	Introduction to Elements
Week 5	Metals, Non-metals and Metalloids
Week 6	Introduction to Atomic Structure
Week 7	Atomic Structure Continued
Week 8	Introduction to the Periodic Table
Week 9	Periodic Table Trends
Week 10	Introduction to Energy
Week 11	Energy Transfer: Conduction, Convection and Radiation
Week 12	Energy Transfer Continued
Week 13	Forms of Energy
Week 14	Law of Conservation of Energy and Applications

Week 15	Energy Transformations and Applications
Week 16	Review of Semester/Year