Austin Road Middle School

"Exceeding Expectations Every Day"

8th Grade

Physical Science Course Syllabus

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Remind 101: Text the message @2k2aba to 81010.
Be sure to use your Scholars Name as the Username.

Austin Road Middle School Vision

Austin Road Middle School will cultivate an environment for creativity, innovation and leadership where we exceed expectations every day.

Austin Road Middle School Mission Statement

Austin Road Middle School strives to develop a nurturing school community that encourages academic success for each student through a rigorous curriculum and extracurricular opportunities supported by dedicated teachers and staff.

Course Description

Eighth grade students record their observations clearly and accurately. They keep records and analyze the data they collect. They work conceptually on the laws of physical science: Conservation of matter, conservation of energy, motion and forces, and energy transformation. They use what they observe to explain the difference between physical and chemical changes. Eighth graders write instructions, describe observations, and show information in graphical form. When analyzing the data they collect, eighth graders can recognize relationships in simple charts and graphs and find more than one way to interpret their findings. The students replicate investigations and compare results to find similarities and differences. Eighth grade students understand the importance of working safely.

The middle school physical science course is designed to give students the necessary skills for a smooth transition from elementary physical science standards to high school physical science standards. The purpose is to give all students an overview of common strands in physical science including, but not limited to, the nature of matter, laws of energy, matter, motion and forces, and energy transformation. This curriculum is NOT intended in any way to take the place of the high school physical science curriculum.

8th Grade Physical Science Content Standards

S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.

a. Develop and use a model to compare and contrast pure substances (elements and compounds) and mixtures.

b. Develop and use models to describe the movement of particles in solids, liquids, gases, and plasma states when thermal energy is added or removed.

c. Plan and carry out investigations to compare and contrast chemical (i.e., reactivity, combustibility) and physical (i.e., density, melting point, boiling point) properties of matter.

d. Construct an argument based on observational evidence to support the claim that when a change in a substance occurs, it can be classified as either chemical or physical.

e. Develop models (e.g., atomic-level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (protons, neutrons, and electrons) and simple molecules.

f. Construct an explanation based on evidence to describe conservation of matter in a chemical reaction including the resulting differences between products and reactants.

S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.

a. Analyze and interpret data to create graphical displays that illustrate the relationships of kinetic energy to mass

and speed, and potential energy to mass and height of an object.
b. Plan and carry out an investigation to explain the transformation between kinetic and potential energy within a system (e.g., roller coasters, pendulums, rubber bands, etc.).
c. Construct an argument to support a claim about the type of energy transformations within a system [e.g., lighting a match (light to heat), turning on a light (electrical to light)].
d. Plan and carry out investigations on the effects of heat transfer on molecular motion as it relates to the collision of atoms (conduction), through space (radiation), or in currents in a liquid or a gas (convection).

S8P3. Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects.
a. Analyze and interpret data to identify patterns in the relationships between speed and distance, and velocity and acceleration.
b. Construct an explanation using Newton's Laws of Motion to describe the effects of balanced and unbalanced forces on the motion of an object.
c. Construct an argument from evidence to support the claim that the amount of force needed to accelerate an object is proportional to its mass (inertia).

S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.
a. Ask questions to develop explanations about the similarities and differences between electromagnetic and mechanical waves.
b. Construct an explanation using data to illustrate the relationship between the electromagnetic spectrum and energy.
c. Design a device to illustrate practical applications of the electromagnetic spectrum (e.g., communication, medical, military).
d. Develop and use a model to compare and contrast how light and sound waves are reflected, refracted, absorbed, diffracted or transmitted through various materials.
e. Analyze and interpret data to predict patterns in the relationship between density of media and wave behavior (i.e., speed).
f. Develop and use a model (e.g., simulations, graphs, illustrations) to predict and describe the relationships between wave properties (e.g., frequency, amplitude, and wavelength) and energy.
g. Develop and use models to demonstrate the effects that lenses have on light (i.e., formation an image) and their possible technological applications.

S8P5. Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.
a. Construct an argument using evidence to support the claim that fields (i.e., magnetic fields, gravitational fields, and electric fields) exist between objects exerting forces on each other even when the objects are not in contact.
b. Plan and carry out investigations to demonstrate the distribution of charge in conductors and insulators.
c. Plan and carry out investigations to identify the factors (e.g., distance between objects, magnetic force produced by an electromagnet with varying number of wire turns, varying number or size of dry cells, and varying size of iron core) that affect the strength of electric and magnetic forces.

Tentative Course Outline

Unit 1	**Nature of Matter**	**9 Weeks**
Unit 2	**Forms and Transformations of Energy**	**5 Weeks**
Unit 3	**Force, Motion**	**9 Weeks**
Unit 4	**Characteristics of Waves**	**5 Weeks**
Unit 5	**Electricity and Magnetism**	**4 Weeks**
	Georgia Milestones Review	**1 Week**
	Enrichment or Remediation	**3 Weeks**

Textbooks and Materials

Textbook used sparingly in class as a reference: Georgia Science: Grade 8 by Glencoe Science

The student must provide:

- **Composition Notebook**
- **Plastic 3-pronged pocket folders (2)-GREEN**
- **Writing Utensil (Pencil/ Pen- blue or black ink ONLY)**
- **Number 2 Pencils**

- **(2) Glue Sticks**
- **Scotch Tape**
- **Lined loose-leaf paper (Daily)**
- **Colored Pencils**
- **Scissors**
- **Metric Ruler**
- **Flash Drive (2GB or higher)**

Course Evaluation Categories

Grading System

A = 100 – 90 B = 89 – 80 C = 79 – 74 D = 73 – 70 F = below 70

Grading Policy (Category Weights)

- **Practice Work: Max 25%**
  Labs/Practice Work 20%
  Notebook 5% (One per term required)

- **Assessment: Max 60%**
  Projects 15%
  *CFA (Common Formative Assessments) 30%
  Vocabulary Quizzes 15%
  **Drop the lowest CFA grade for the school year.)*

- **Final Exam: 15%**

Total: 100 %

Expectations

Assignments that are not submitted on time will receive an "M" (missing) within Infinite Campus gradebook. Not submitting assignments is a behavioral characteristic that should not receive an academic penalty. ARMS wishes to create a more responsible scholar/person and address said behavior(s) through reflection activities, as well as constructive dialogue. In doing so, our hope is that scholars will begin assuming responsibility for ensuring that their work is submitted on time, and that the quality therein far exceeds our expectations. All scholars will be given ample opportunities to submit their work through activities to include but not limited to amnesty day(s), working lunch, before/after school tutorial, etc. All work assigned an "M" (missing) within Infinite Campus will remain as such during the term in which the scholar's assignment was due. **Upon the completion of the term, any assignment that is not submitted, as required, will then result in the scholar receiving a grade of zero (0%) to remain permanently within the gradebook. Finally, all assignments submitted after the assigned due date will not receive a late penalty and will be graded accordingly contingent upon satisfactory completion of all requirements within the assignment.**

Parent-Teacher Communication

- **Email is the best way to contact me:** karla.lomax@henry.k12.ga.us
- **Homework assignments and announcements will be sent out via Remind 101 and Google Classroom**

Teacher Availability

Appointments can be made for teacher conferences by emailing karla.lomax@henry.k12.ga.us

Please note: It may be necessary to make adjustments in the above course syllabus based on the teacher professional observations and student needs.

Please Detach and send back with your student.

*Student Name*_____

Student's Signature_____

Parent/Guardian's Signature_____

Telephone Number (hm)_____ (wk)_____ (cell)_____

E-mail address_____
Allergies_____