

COURSE GUIDELINE

GREEN = CONTENT (NOUNS); YELLOW = SKILLS (VERBS)

GRADE:

SUBJECT:

TEACHER:

Month Or Qtr	STANDARD	RESOURCES	STRATEGIES	ASSESSMENTS
	<p>9-12.P.1.1. Students are able to use the Periodic Table to determine the atomic structure of elements, valence number, family relationships, and regions (metals, nonmetals, and metalloids)</p> <p>Bloom: Analysis I can use the periodic table to find information about: - the # of protons, electrons and neutrons and where they are located within the atom (atomic structure of elements), - the # of outermost electrons in an atom (valence number), - groups of elements with similar properties found in the same vertical column on the periodic table (family relationships) - areas of elements (regions).</p>	Textbooks, periodic table, internet sites (webelements.com), teacher's resource books. 9 th grade physical science has an online textbook.	Discussion & practice. Electron configuration practice in chemistry. Lab activities to reinforce concepts. Model drawings and building to help visualize the internal structure of the atom.	Tests, observation, lab grades, daily reviews, worksheet practice. Freshmen complete a Publisher poster project with facts about a chosen element that is graded with a rubric.
	<p>9-12.P.1.2. Students are able to describe ways that atoms combine.</p> <p>Bloom: Comprehension I can tell in words or numbers (describe) how covalent, ionic and metallic bonds form (ways) based upon whether electrons are shared and/or transferred between atoms (atoms combine)</p>	Textbooks, periodic table, internet sites, Bonding video clip, lab manual, teacher's resource books. Physical science has an online textbook.	Lecture, discussion, practice. Lab activities, 9 th grade does Cherios activity showing valence electrons and types of bonding.	Tests, observations, daily reviews, lab grades, section reviews.
	<p>9-12.P.1.3. Students are able to</p>	Textbooks, internet,	Lecture, discussion, lab	Tests, observations,

	<p>predict whether reactions will speed up or slow down as conditions change.</p> <p>Bloom: Application I can use information to make a best guess (predict) about whether a chemical change in a substance (reaction) will speed up or slow down as:</p> <ul style="list-style-type: none"> - temperature changes, - size of the particles changes, - density of the particles changes - catalysts (particles that affect the reaction without being altered themselves) are added. 	<p>teacher's resource book, online textbook for 9th grade physical science.</p>	<p>activities on rate of reactions and catalysts.</p>	<p>lab grades, section reviews.</p>
	<p>9-12.P.1.4. Students are able to balance chemical equations by applying the Law of Conservation of Matter.</p> <p>Bloom: Application I can make both sides of chemical equations equal (balance) by using what I know about how the total mass of reactants, starting materials, is equal to total mass of products, ending materials, in a chemical reaction (Law of Conservation of Matter).</p>	<p>Textbooks, periodic table, internet sites, lab manual, teacher's resource books. Physical science has an online textbook.</p>	<p>Lecture, practice problems, teacher demonstrations. Lab activities on conservation of mass. Worksheet practice and review.</p>	<p>Teacher observations, lab grades, section reviews, practice worksheets, chapter tests.</p>
	<p>9-12.P.1.5. Students are able to distinguish among chemical, physical, and nuclear changes.</p> <p>Bloom: Comprehension I can tell the differences (distinguish) among reactions that:</p> <ul style="list-style-type: none"> - form new substances with different properties (chemical change), - change the form of a substance but not its chemical content (physical change) - cause the nucleus of an atom to gain particles, fusion, or lose particles, fission (nuclear change). 	<p>Textbooks, periodic table, internet sites, lab manual, teacher's resource books. Physical science has an online textbook.</p>	<p>Lecture, teacher demonstrations, teacher led examples on nuclear equations, lab on half-life, class discussions.</p>	<p>Teacher observations, lab grades, section reviews, practice worksheets, chapter tests.</p>
	<p>9-12.P.2.1. Students are able to apply concepts of distance and time to the quantitative relationships of motion using appropriate mathematical</p>	<p>Textbooks (Holt and Harcourt-Brace Physical Science and Holt Physics),</p>	<p>Lecture, discussion, teacher led examples, drill & practice, lab activities on speed and acceleration.</p>	<p>Teacher observations, graded labs, graded practice problems,</p>

	<p>formulas, equations, and units.</p> <p>Bloom: Analysis I can use what I know (apply) about concepts of distance and time to find numerical values using formulas/equations and graphs (quantitative relationships of motion) for: - speed (change in distance/change in time) using appropriate metric units, - velocity (speed with direction $V=\Delta D/\Delta t$) using appropriate metric units - acceleration (average $A_{avg}=\Delta V/\Delta t$ and instant $A=V_2-V_1/t$) using appropriate metric units.</p>	<p>internet sites, lab manual, teacher's resource books, and power points. Physical science has an online textbook.</p>		<p>section reviews, chapter tests.</p>
	<p>9-12.P.2.2. Students are able to predict motion of an object using Newton's Laws.</p> <p>Bloom: Application I can use information to make a best guess (predict) about the movement of anything with mass, including momentum (motion of an object) using the three laws that govern all movements of objects: Law of Inertia, Force = mass x acceleration, Action/Reaction (Newton's Laws).</p>	<p>Textbooks (Holt and Harcourt-Brace Physical Science and Holt Physics), internet sites, lab manual, teacher's resource books, and power points. Physical science has an online textbook.</p>	<p>Discussions, lecture, example problems, drill and practice labs on Newton's three laws and momentum.</p>	<p>Teacher observations, practice problems(graded), graded labs, chapter test.</p>
	<p>9-12.P.2.3. Students are able to relate concepts of force, distance, and time to the quantitative relationships of work, energy, and power.</p> <p>Bloom: Application I can tell in words or numbers the connections among (relate) the concept of a push or pull (force), distance and time using numerical terms (quantitative) that express the relationship of: - distance covered multiplied by push or pull applied (work) - the capacity to do work (energy)</p>	<p>Textbooks (Holt and Harcourt-Brace Physical Science and Holt Physics), internet sites, lab manual, teacher's resource books, and power points. Physical science has</p>	<p>Class discussions, lecture, teacher led example problems, lab activity on power running up the stairs, drill and practice, lab on 1st class levers, lab on pulleys.</p>	<p>Teacher observations, graded practice problems, graded labs, chapter test</p>

	- how fast work is done over a time period (power).	an online textbook.		
	<p>9-12.P.3.1. Students are able to describe the relationships among potential energy, kinetic energy, and work as applied to the Law of Conservation of Energy.</p> <p>Bloom: Application I can use what I know about how energy is neither created nor destroyed in any chemical or physical changes (Law of Conservation of Energy) to tell in words and numbers (describe), the connections (relationships) among - energy that is stored (potential energy) - energy that is based on movement of matter (kinetic energy) - energy that is transferred through motion (work).</p>	Textbooks (Holt and Harcourt-Brace Physical Science and Holt Physics), internet sites, lab manual, teacher's resource books, and power points. Physical science has an online textbook.	Lecture, teacher led example problems, class discussions, lab activity on the potential energy of a bouncing ball, Road Runner & Coyote activity illustrating changes between types of PE and KE using a video clip,	Teacher observations, graded practice problems, graded labs, chapter test.
	<p>9-12.P.3.2. Students are able to describe how characteristics of waves are related to one another.</p> <p>Bloom: Comprehension I can tell in words or numbers (describe) how the frequency, wavelength, amplitude, speed and period (characteristics of waves) are related to one another.</p>	Textbooks (Holt and Harcourt-Brace Physical Science and Holt Physics), internet sites, lab manual, teacher's resource books, and power points. Physical science has an online textbook.	Lecture, class discussions, teacher led example problems, lab on wave characteristics, internet site on Doppler effect, lab on standing waves, layered research curriculum on sound (Students complete one activity from each section. If they want an A they choose one extra activity from any section).	Teacher observations, graded practice problems, graded labs, chapter test, rubric for the layered curriculum sound research project.
	<p>9-12.P.3.3. Students are able to describe electrical effects in terms of motion and concentrations of charged particles.</p> <p>Bloom: Application I can tell in words or numbers (describe) about</p>	Textbooks (Holt and Harcourt-Brace Physical Science, and Holt Physics), internet sites, lab	Lecture, teacher led example problems on Ohm's law and power output of electricity, class discussions, labs on static electricity, parallel and series	Teacher observations, graded practice problems, graded labs, chapter test.

	magnetism, flow of electrons and attraction/repulsion of objects (electrical effects) in terms of: - electrical current, resistance, static discharge (motion of charged particles), - voltage, buildup of static charge (concentration of charged particles).	manual, teacher's resource books, and power points. Physical science has an online textbook.	circuits, and resistance.	
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2 nd & 3 rd	<p>9-12.L.1.1. Students are able to relate cellular functions and processes to specialized structures within cells.</p> <p>Bloom: Analysis I can tell in words or numbers the connections between (relate):</p> <ul style="list-style-type: none"> - transport of materials and the cell membrane, Golgi apparatus and vacuole - acquisition of energy and chloroplasts - use of energy and mitochondria - synthesis of proteins and endoplasmic reticulum - storage and transfer of genetic materials and the nucleus. 	Textbooks (Glencoe and Prentice Hall Biology), teacher's resource books, internet, online textbook, virtual lab CD, Interactive chalkboard power points.	Discussion & lecture, various lab activities on plant and animal cells, osmosis through a plant membrane, cell energy, fermentation, stages and time for mitosis, comparing mitosis & meiosis. Project on "A trip through the cell" travel brochure. Voki project on	Rubric for the projects, observations, graded lab activities, daily reviews, chapter tests.

			the stages of mitosis, Power point project on photosynthesis & respiration, Claymation project illustrating the stages of meiosis, Movie project on transcription & translation.	
4 th	<p>9-12.L.1.2. Students are able to classify organisms using characteristics and evolutionary relationships of major taxa.</p> <p>Bloom: Analysis I can assign (classify) organisms to categories of kingdoms and phyla (major taxa) using - cell structure, methods of energy acquisition, and anatomical structures (characteristics) - physical and genetic similarities (evolutionary relationships).</p>	Textbooks (Glencoe and Prentice Hall Biology), teacher's resource books, internet, online textbook, virtual lab CD, Interactive chalkboard power points.	Class discussions, lecture, lab on classification, discussion of homologous, analogous, and vestigial structures.	Teacher observations, drill and practice, graded labs, chapter tests.
4 th	<p>9-12.L.1.3. Students are able to identify structures and function relationships within major taxa.</p> <p>Bloom: Analysis I can select from given information (identify) relationships between different parts of an organism (structures) and specific jobs of the parts (function) within kingdoms and phyla (major taxa).</p>	Textbooks (Glencoe & Prentice Hall Biology), teacher's resource books, internet, online	Class discussions, comparisons to other hierarchical systems such as earth, North America, US, etc.	Teacher observations, drill and practice, graded labs, chapter tests.

		textbook, virtual lab CD, Interactive chalkboard power points.	Lab on making & using a biological key.	
3 rd	<p>9-12.L.2.1. Students are able to predict inheritance patterns using a single allele.</p> <p>Bloom: Application I can use information to make a best guess (predict) about simple dominance, codominance, sex-linked traits (inheritance patterns) using contrasting forms of a gene (alleles).</p>	Textbooks (Glencoe and Prentice Hall biology), teacher's resource books, internet, online textbook, virtual lab CD, Interactive chalkboard power points.	Class discussions, lecture, Punnet square example problems, labs on probability, sex-linked traits, identifying genetic disorders, and studying pedigrees. Cloning poster project.	Teacher observations, graded practice problems, graded labs, rubric for cloning poster project, chapter tests.
3 rd & 4 th	<p>9-12.L.2.2. Students are able to describe how genetic recombination, mutations, and natural selection lead to adaptations, evolution, extinction, or the emergence of new species.</p> <p>Bloom: Synthesis I can tell in words or numbers (describe) how - crossover, independent assortment and random fertilization (genetic recombination), and/or - change in the DNA sequence that alters a trait (mutations), and/or - survival and reproduction of organisms with favorable variations (natural selection) all may lead to - characteristics that improve the chances for survival (adaptations),</p>	Textbooks (Glencoe and Prentice Hall Biology), teacher's resource books, internet, online textbook, virtual lab CD, Interactive chalkboard power points.	Teacher led discussions, lecture, Cancer project (research various types of cancer-survival rate, treatment, symptoms, etc). Lab on natural selection. Lab on differences between monkey,	Teacher observations, graded practice problems, graded labs, rubric for cancer research project, chapter tests.

	<ul style="list-style-type: none"> - changes in a species over time (evolution), - elimination of an entire species (extinction), - and development of a new species (emergence). 		gorilla, and human skulls.	
1 st	<p>9-12.L.3.1. Students are able to identify factors that cause changes in stability of populations, communities, and ecosystems.</p> <p>Bloom: Comprehension</p> <p>I can select from (identify) weather, climate, resources and human activity (factors) that cause changes in stability of</p> <ul style="list-style-type: none"> - groups of organisms of the same species in the same area (populations), - populations living and interacting in the same area (communities), and - the organization and interaction of communities with their physical environment (ecosystems). 	Glencoe Biology textbook, posters, internet, personal experience, and student experiences. Lab manual is also needed.	Classroom discussion and powerpoints. Daily review of prior material. Labs both hands on and virtual on communities and population biology. Students create posters on a chosen biome and conduct research to learn about the biomes climate, plants, animals, and location. Students complete a wolf reintroduction activity utilizing internet research and take a stand on the reintroduction of the wolf.	Chapter tests, projects graded with a rubric. Teacher observations. Grading lab activities.

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1 st	<p>9-12.E.1.1 Students are able to explain how elements and compounds cycle between living & non-living systems.</p> <p>Bloom: Comprehension I can give details (explain) of how nitrogen, carbon and oxygen (elements) and water, carbon dioxide, carbonates, ammonia, nitrates, and nitrites (compounds) cycle between living and non-living systems.</p>	Internet, Glencoe biology textbook, interactive chalkboard CD.	Classroom discussion & PowerPoint's. Poster projects on chemical cycles in the environment. Lab activity.	Daily review questions, teacher observation, Grading rubric for chemical cycle posters.
2 nd	<p>9-12.E.1.2. Students are able to describe how atmospheric chemistry may affect global climate.</p> <p>Bloom: Application I can tell in words or numbers (describe) how various processes of atmospheric chemical changes and cycles such as the greenhouse effect and ozone fluctuations (atmospheric chemistry) may affect the overall patterns of meteorological conditions of the earth (global climate).</p>	Internet, Glencoe biology textbook, Holt Chemistry textbook, Interactive chalkboard power points.	Lecture, discussion,	Chapter test, observation, daily review questions.
2 nd	<p>9-12.E.1.3. Students are able to assess how human activity has changed the land, ocean, and atmosphere of Earth.</p>	Glencoe biology textbook, Holt Chemistry	Discussion, lab on water quality, lecture,	Daily review questions, teacher

	<p>Bloom: Analysis I can estimate (assess) how pollution, combustion reactions, forest cover changes, urban growth and agriculture (human activity) have changed the land, ocean, and atmosphere of Earth.</p>	<p>textbook, internet, TRB, lab manual, virtual lab CD, Interactive chalkboard power points.</p>	<p>cooperative group project on the reintroduction of the wolf in Yellowstone Nat.l Park.</p>	<p>observation, graded labs, grading rubric on the wolf reintroduction project, chapter test.</p>
	<p>9-12.E.2.1 Students are able to recognize how Newtonian mechanics can be applied to the study of the motions of the solar system.</p> <p>Bloom: Comprehension I can select from given information based on prior knowledge (recognize) how Newton's law of inertia and universal gravitation (Newtonian mechanics) can be applied to the study of the rotation and revolution of planets and other objects in the solar systems (motions of solar system).</p>	<p>Holt Physics textbook, internet, TRB, lab manual.</p>	<p>Discussion, activity on Kepler's law of Equal areas, lecture, example problems led by teacher, student practice problem worksheet.</p>	<p>Daily review questions, teacher observation, graded labs and assignments, chapter test.</p>

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All	<p>9-12.S.1.1. Students are able to explain ethical roles and responsibilities of scientists and scientific research.</p> <p>Bloom: Application I can give reasons for (explain): - behavioral standards in the conduct of scientific inquiry involving the sharing and</p>	<p>Glencoe Biology Text, Holt Chemistry Text, Holt Physical Science text, Holt</p>	<p>Lecture & discussion. Discussion throughout the year.</p>	<p>Post responses to questions involving ethics such as cloning on my wiki</p>

	<p>accuracy of data, acknowledgement of sources and following applicable laws (ethical roles and responsibilities of scientists)</p> <ul style="list-style-type: none"> - consideration of ethical issues involving animal and human subjects and dealing with the management of hazardous materials and wastes (ethical roles and responsibilities of scientific research). 	Physics Text,		space. Test
All	<p>9-12.S.1.2. Students are able to evaluate and describe the impact of scientific discoveries on historical events and social, economic, and ethical issues.</p> <p>Bloom: Evaluation I can judge the value of (evaluate) and tell in words or numbers (describe) changes caused by findings based on experiments (impact of scientific discoveries) on</p> <ul style="list-style-type: none"> - things that happened in the past (historical events) - how people live and interact (social issues) - ways people trade goods and services (economic issues) - what is considered to be right or wrong (ethical issues). 	Glencoe Biology Text, Holt Chemistry Text, Holt Physical Science text, Holt Physics Text,	Lecture & discussion. Discussion throughout the year. For example: what is the effect about our knowledge of the atom due to Rutherford's Gold Foil Experiment?	Teacher observations, chapter tests, blog topics, wiki discussions.
All	<p>9-12.S.2.1. Students are able to describe immediate and long-term consequences of potential solutions for technological issues.</p> <p>Bloom: Evaluation I can tell in words or numbers (describe) the immediate and long-term consequences of possible corrections (potential solutions) for problems related to applications in science (technological issues).</p>	Glencoe Biology Text, Holt Chemistry Text, Holt Physical Science text, Holt Physics Text	Lecture & discussion. Discussion throughout the year.	Teacher observations, chapter tests, blog topics, wiki discussions
All	<p>9-12.S.2.2. Students are able to analyze factors that could limit technological design.</p> <p>Bloom: Analysis I can separate into parts (analyze) how environmental problems, expenses,</p>	Glencoe Biology Text, Holt Chemistry Text, Holt Physical	Lecture & discussion. Discussion throughout the	Teacher observations, chapter tests, blog topics,

	manufacturing processes, and ethical issues (factors) could limit making products by applying scientific principles (technological design).	Science text, Holt Physics Text	year.	wiki discussions
All	<p>9-12.S.2.3. Students are able to analyze and describe the benefits, limitations, cost, and consequences involved in using, conserving, or recycling resources.</p> <p>Bloom: Synthesis I can separate into parts (analyze) and tell in words or numbers (describe) the benefits, limitations and consequences involved in using, conserving and recycling materials taken from the earth such as minerals, trees, and fuels (resources).</p>	Glencoe Biology text, Holt Chemistry text, Holt Physical Science text.	Lecture, class discussions, lab on how long it takes garbage to decompose.	Teacher observations, graded assignments, chapter test.

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1st	<p>9-12.N.1.1. Students are able to evaluate a scientific discovery to</p>	Glencoe Biology Text, Holt	Lecture & discussion.	Teacher observations,

	<p>determine and describe how societal, cultural, and personal beliefs influence scientific investigations and interpretations.</p> <p>Bloom: Evaluation I can judge the value of (evaluate) a finding based on experiments (scientific discovery) to find appropriate information about (determine) and tell in words or numbers (describe) how</p> <ul style="list-style-type: none"> - opinions of people living together (societal beliefs) - views based on religion or race (cultural beliefs) and - ideas of the scientist (personal beliefs) <p>influence experiments designed to find out about something (scientific investigations) and explanations of what experiment results mean (scientific interpretations).</p>	Chemistry Text, Holt Physical Science text, Holt Physics Text	Discussion throughout the year.	chapter tests, blog topics, wiki discussions
1 st	<p>9-12.N.1.2. Students are able to describe the role of observation and evidence in the development and modification of hypotheses, theories, and laws.</p> <p>Bloom: Synthesis I can tell in words or numbers (describe) the role of information gathered by use of senses and instruments (observation) and experimental results used to support a conclusion (evidence) in the development and modification of:</p> <ul style="list-style-type: none"> - explanations that can be tested of (hypotheses) - well-tested explanations based on observation, experimentation, and reasoning (theories) - generalizations that describe recurring facts or events in nature (laws). 	Physical Science text, Biology text, classroom poster, Physics and Chemistry text.	Lecture, lab activities, and discussions. Student designed experiments.	Labs, classroom participation, & tests. Analyzing student data collected during their designed experiments.
All	<p>9-12.N.2.1. Students are able to apply science process skills to design and conduct student investigations. (Synthesis)</p> <p>Bloom: Synthesis</p> <ul style="list-style-type: none"> - form a hypothesis - develop a procedure - select and correctly use appropriate instruments 	Ongoing in all science classes (biology, physical science, chemistry, and physics)	Student designed lab experiments. Professionally designed lab experiments.	Labs, classroom participation, demonstration of lab techniques, & teacher

	<ul style="list-style-type: none"> - revise explanations based on evidence - form conclusions - communicate and defend the results (science process skills) to plan (design) and perform (conduct) experiments (investigations). 	physics).		teacher observation.
All	<p>9-12.N.2.2. Students are able to practice safe and effective laboratory techniques.</p> <p>Bloom: Application I can perform repeatedly (practice) safe and effective calibrations, measurements and handling of chemicals and instruments (laboratory techniques).</p>	Ongoing in all science classes (biology, physical science, chemistry, and physics).	Demonstrations, discussions (students posted 5 lab rules that they thought were important for safety).	Observation during lab activities.