**PACING GUIDE**

**COURSE:** Applied Physical Science **GRADE(S): 11-12**

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| **MONTH** | **UNIT** | **STANDARDS/SKILLS** | **ASSESSMENTS**  What evidence (formative/summative) is utilized to establish that the content, standards, & skills have been mastered? | **CONTENT**  Topics being covered? What do students need to know? (*nouns*) | **ACTIVITIES**  w/Integration of Technology & Career Ready Practices |
| September | Motion and Forces | [PS2.A](http://www.nap.edu/openbook.php?record_id=13165&page=114) [**HS-PS2-1**](http://www.nextgenscience.org/sites/ngss/files/HS-PS2-1_Evidence%20Statements%20Jan%202015.pdf)[**HS-PS2-2**](http://www.nextgenscience.org/sites/ngss/files/HS-PS2-2_Evidence%20Statements%20Jan%202015.pdf) **HS-PS2-3** [**HS-ETS1-2**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-2_Evidence%20Statements%20Jan%202015.pdf)[**HS-ETS1-**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-2_Evidence%20Statements%20Jan%202015.pdf)**3** | * Calculating car speed * Graphing motion quiz * Acceleration activity * 2nd Law math quiz * Egg drop project * Terminal velocity simulator * Unit test | * Distance, Velocity, Acceleration * Forces and Motion * Newton’s Laws of Motion * Graphing Motion * Momentum | * <http://phet.colorado.edu/en/simulation/forces-1d> * <http://phet.colorado.edu/en/simulation/forces-and-motion> * <https://concord.org/stem-resources/parachute-and-terminal-velocity> |
| October | Fundamental Forces | ([PS2.B](http://www.nextgenscience.org/5ps2-motion-stability-forces-interactions)) **(**[**HS-PS2-4**](http://www.nextgenscience.org/sites/ngss/files/HS-PS2-4_Evidence%20Statements%20Jan%202015.pdf)**)** | * Newton’s gravity online lab * Newton’s gravity quiz * Coulomb’s interactive model activity * Coulomb’s quiz * Unit test | * Newton’s gravity * Einstein’s gravity * EM force * Nuclear Forces | * <http://phet.colorado.edu/en/simulation/gravity-force-lab> * <http://phet.colorado.edu/en/contributions/view/3665> * <https://concord.org/stem-resources/electrostatics> |
| November | Energy | ([PS3.A](http://www.nap.edu/openbook.php?record_id=13165&page=120) and [PS3.B](http://www.nap.edu/openbook.php?record_id=13165&page=124)) **(**[**HS-PS3-2**](http://www.nextgenscience.org/sites/ngss/files/HS-PS3-2_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-PS3-1**](http://www.nextgenscience.org/sites/ngss/files/HS-PS3-1_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-PS3-3**](http://www.nextgenscience.org/sites/ngss/files/HS-PS3-3_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-ETS1-1**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-1_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-ETS1-**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-1_Evidence%20Statements%20Jan%202015.pdf)**2) (**[**HS-ETS1-**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-1_Evidence%20Statements%20Jan%202015.pdf)**3) (**[**HS-ETS1-**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-1_Evidence%20Statements%20Jan%202015.pdf)**4)** | * Energy online lab * Energy quiz * Energy math quiz * Solar house project * Unit test | * Types of Energy * Potential Energy * Kinetic Energy * Law of Conservation of Energy * Energy Conversions * Solar Panels | * <https://phet.colorado.edu/en/simulation/energy-skate-park-basics> * <http://www.physicsclassroom.com/lab/energy/Elabs.cfm> * <https://concord.org/stem-resources/model-solar-house> |
| December | Waves | **(**[**HS-PS4-1**](http://www.nextgenscience.org/sites/ngss/files/HS-PS4-1_Evidence%20Statements%20Jan%202015.pdf)**)** | * Measuring waves activity * Wave properties quiz * Sound quiz * Sound online lab * Unit test | * Wave properties * Resonance * Interference * Sound | * <https://phet.colorado.edu/en/simulation/legacy/wave-on-a-string> * <https://phet.colorado.edu/en/contributions/view/3177;jsessionid=58F527D82E12BCB550FDC069BD4BB1C5> * <https://phet.colorado.edu/en/simulation/legacy/wave-interference> * <http://hyperphysics.phy-astr.gsu.edu/hbase/class/phscilab/restube2.html> * <https://phet.colorado.edu/en/simulation/sound> * <http://www.opensourcephysics.org/items/detail.cfm?ID=7902> |
| January/February | Electromagnetic Radiation | **(**[**HS-PS4-3**](http://www.nextgenscience.org/sites/ngss/files/HS-PS4-3_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-PS4-4**](http://www.nextgenscience.org/sites/ngss/files/HS-PS4-4_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-PS4-5**](http://www.nextgenscience.org/sites/ngss/files/HS-PS4-5_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-ETS1-1**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-1_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-ETS1-3**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-3_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-ETS1-**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-3_Evidence%20Statements%20Jan%202015.pdf)**2)** | * EM wave properties quiz * Radio online lab * Microwave online lab * Photoelectric effect online lab * Wave/particle duality online lab * Unit test | * EM spectrum * Uses of EM waves * Interference * Photoelectric Effect * Wave/Particle duality | * <http://missionscience.nasa.gov/ems/01_intro.html> * <http://www.nasa.gov/pdf/434481main_LP3-MakingWaves_508.pdf> * <https://phet.colorado.edu/en/simulation/radio-waves> * <https://phet.colorado.edu/en/simulation/wave-interference> * <https://phet.colorado.edu/en/simulation/photoelectric> * <https://phet.colorado.edu/en/simulation/molecules-and-light> * <https://phet.colorado.edu/en/simulation/quantum-wave-interference> |
| March/April | Structure and Properties of Matter | **(**[**HS-PS1-1**](http://www.nextgenscience.org/sites/ngss/files/HS-PS1-1_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-PS1-2**](http://www.nextgenscience.org/sites/ngss/files/HS-PS1-2_Evidence%20Statements%20Jan%202015.pdf)**)** [**HS-PS1-3**](http://www.nextgenscience.org/sites/ngss/files/HS-PS1-3_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-PS2-6**](http://www.nextgenscience.org/sites/ngss/files/HS-PS2-6_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-ETS1-3**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-3_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-ETS1-4**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-4_Evidence%20Statements%20Jan%202015.pdf)**)** | * Building an atom online lab * Drawing atoms quiz * Periodic Trends quiz * Groups of the Table activity * Predicting reactivity quiz * Unit test | * Atomic structure * Periodic Trends * History of the Periodic Table * Reactivity | * <http://phet.colorado.edu/en/simulation/build-an-atom> * <http://www.mhhe.com/biosci/genbio/virtual_labs/periodic_table/main.html> * <http://www.chemheritage.org/discover/online-resources/chemistry-in-history/activities/path-to-the-periodic-table.aspx> * <http://www.newburyparkhighschool.net/dogancay/hchem/labs/hlab02_mendeleev.pdf> |
| May/June | Bonding and Chemical Reactions | **(**[**HS-PS1-7**](http://www.nextgenscience.org/sites/ngss/files/HS-PS1-7_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-PS1-4**](http://www.nextgenscience.org/sites/ngss/files/HS-PS1-4_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-PS1-5**](http://www.nextgenscience.org/sites/ngss/files/HS-PS1-5_Evidence%20Statements%20Jan%202015.pdf)**) (**[**HS-PS1-**](http://www.nextgenscience.org/sites/ngss/files/HS-PS1-5_Evidence%20Statements%20Jan%202015.pdf)**6) (**[**HS-ETS1-2**](http://www.nextgenscience.org/sites/ngss/files/HS-ETS1-2_Evidence%20Statements%20Jan%202015.pdf)**)** | * Bond type practice * Bond type quiz * Classifying reactions quiz * Balancing reactions practice * Balancing online lab * Balancing reactions quiz * Polarity practice * Polarity online lab * Polarity quiz * Rates of reaction online lab * Rates quiz * Unit test | * Bond Types- Covalent, Ionic, Metallic * Drawing Reactions * Classifying Reactions * Balancing Reactions * Polarity * Rates of Reaction | * <https://phet.colorado.edu/en/simulation/balancing-chemical-equations> * <https://phet.colorado.edu/en/simulation/legacy/molecule-polarity> * <https://phet.colorado.edu/en/simulation/legacy/reactions-and-rates> |