**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>
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| 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>
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| 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>
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| 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>
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| 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>
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| 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>
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