

Year at a Glance – Eighth Grade Science

Guiding Concept: The processes that change Earth’s systems at different spatial scales today also caused changes in the past.

Official 2019-20 Version

What Students Learn

Students learn about what causes the **mass extinctions and species diversification** events that happen repeatedly in Earth’s history. Understanding this phenomenon requires that students understand many different aspects of science, including the physics of **impacts and collisions** and the **applications of Newton’s Laws**.

Students explore **gravity** and electromagnetism in the context of observable features of the Sun, Moon, stars, and galaxies. Students develop a model that explains these **celestial motions** and visualize complex motions from multiple frames of reference both as observers on Earth and out in space.

Students examine Earth’s long **geological history** and the changes in Earth’s web of life over billions of years. Students learn how **evolution and natural selection** explain life's unity and diversity based on evidence.

Increases in human population and in per-capita consumption of natural resources impact Earth’s systems. Students use modern technologies, such as **digitized signals** to encode and transmit information, to help monitor, understand and reduce these impacts.

Units	Overview of Depth of Mastery
Objects move and collide.	<ul style="list-style-type: none"> Apply Newton’s three laws of motion to design a solution to a problem involving the motion of two colliding objects.* (MS-PS2-1, MS-PS2-2, MS-ETS1-3)
Noncontact forces influence phenomena locally and in the solar system	<ul style="list-style-type: none"> Develop and use a model of the gravitational interactions of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons (MS-ESS1-1 & MS-PS2-4) Analyze and interpret data for patterns in the fossil record that documents the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. (MS-LS4-1)
Evolution explains life’s unity and diversity.	<ul style="list-style-type: none"> Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals’ probability of surviving and reproducing in a specific environment. (MS-LS4-4)
Human activities help sustain biodiversity and ecosystem services in a changing world.	<ul style="list-style-type: none"> Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. (MS-PS4-2) Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. (MSESS3-4)

What is the YAG? Developed by Irvine Unified teacher committees, the Year at a Glance documents represent these core non-negotiables of learning for all students. All content standards have been examined and prioritized for instructional focus based on whether the standard shows evidence of endurance (the learning will be used for many years), leverage (the learning is applied across content areas) and readiness (the learning is a key foundational piece). **Although all standards are taught in all content areas, the Year at a Glance identifies the standards which are the most important to focus instruction, reteaching efforts, extension, and reassessment opportunities.** The essential standards represent the focus of Professional Learning Communities' team work throughout the year. This ensures that PLC Teams are able to focus resources on what is most important