Physics, Chemistry, and Biology in D86

PHYSICS & PHYSICS HONORS	CHEMISTRY & CHEMISTRY HONORS	BIOLOGY *(DRAFT)*
Science Practices	Big Bang and Nuclear Chemistry	Habitability
Constant Velocity	Atomic Structure	Populations
Forces*/Acceleration and Gravity*	The Periodic Table	Ecosystems
Forces & Motion (1-D) and (2-D)**	Chemical Bonding	Photosynthesis
Circular Motion**	Chemical Quantities	Cellular Respiration
Momentum	Chemical Reactions	Evolution
Waves	Stoichiometry and Copper Unlimited Project	History of Life
Application of Waves: Big Bang	Thermochemistry	DNA
Application: Earth's Interior and Plate Tectonics*	Gases	Cell Growth & Division
Energy	Weather and Climate	RNA & Protein Synthesis
Circuits + Electromagnetic Energy Production**	Climate Change	Biotechnology
Orbital Motion	Reaction Rates and Equilibrium	Genetics
Application of Orbital Motion: Seasons & Climate	Acid-Base Equilibria	Population Evolution
	Ocean Acidification	Humans and Global Change
**Honors only **Regular only*	Organic Chemistry	

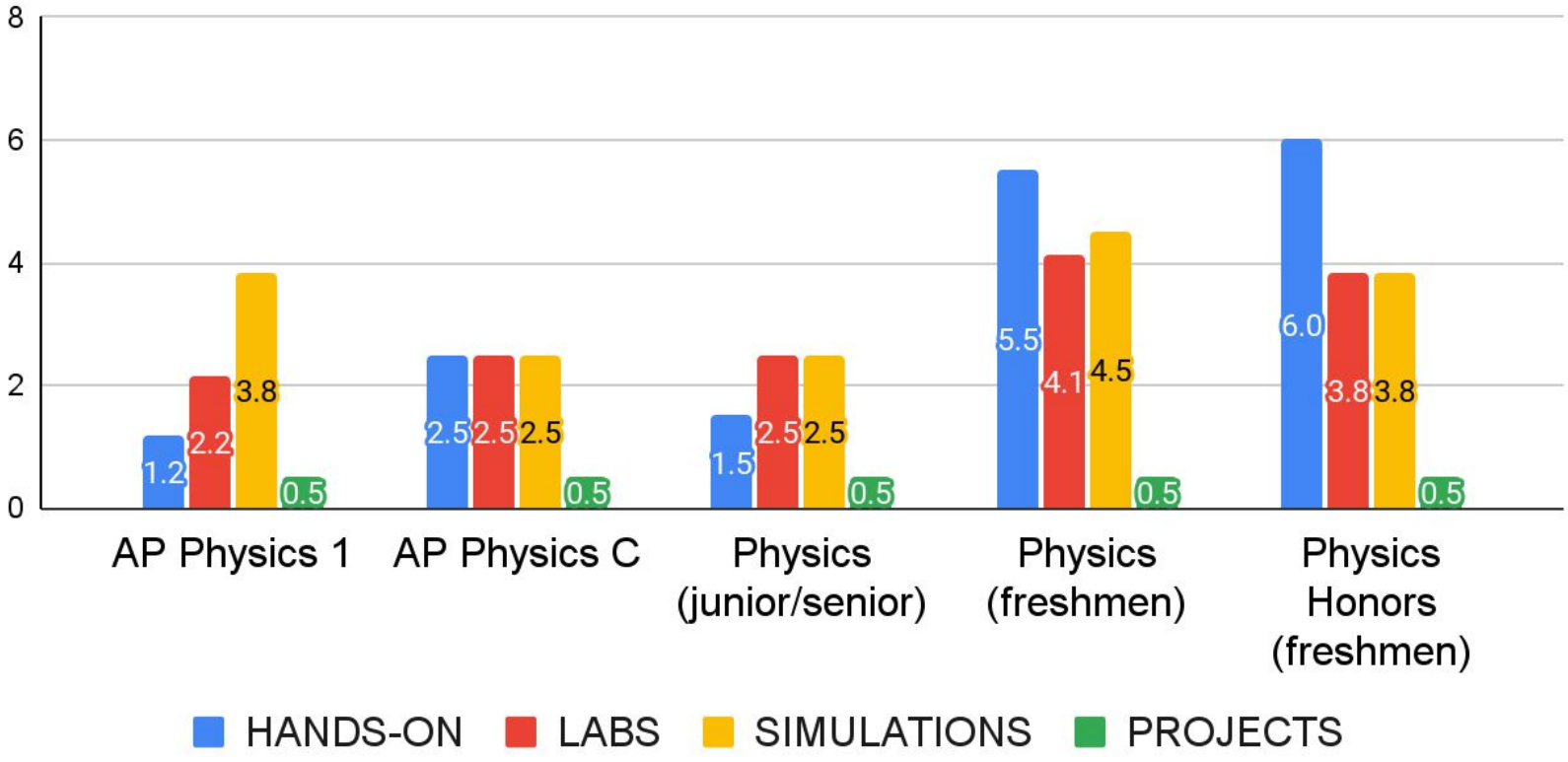
Emphasis on in-depth understanding

Physics (Junior)	Physics (Freshman)	Physics Honors (Freshman)
6.2 Understand impulse.	**I can create and utilize models to problem-solve situations involving the linear collision of an isolated object.** ● I can analyze an *F-t* graph of a collision to determine information such as average/maximum force, and time of impact. ● I can apply the impulse equation: $F_{t=} mv_f - mv_i$, to solve for F, t, m, v_f , v_i ● I can use the impulse equation to qualitatively justify and make claims about the relationship between the net force acting on an object and time duration of that net force.	**I can create and utilize models to problem-solve situations involving the linear collision of an isolated object.** ● I can analyze a *v-t, &/or F-t* graph of a collision to determine information such as impulse, velocity before/after a collision, average/maximum impact force, and time of impact. This includes understanding that area under an F-t graph can be used to calculate impulse delivered to an object. ● I can apply the impulse equation: $F_{t=} mv - mv_o$, to solve for F, t, m, v , v_o ● I can use the impulse equation to qualitatively justify and make claims about the relationship between the net force acting on an object and time duration of that net force.

Comparing Physics Objectives with an NGSS Emphasis

Physics (Junior)	Physics (Freshman)
4.1 Identify different types of forces 4.2 Demonstrate knowledge about friction 4.3 Draw/choose/interpret a free body diagram 4.4 Write a force equation from a given free body diagram 4.5 - 4.7 Understand and apply Newton's 1st/2nd/3rd Law	**I can draw force diagrams (free-body diagrams).** ● I can identify which forces are acting on an object. **I can use Newton's Laws to make and justify claims about the forces acting on an object.** ● I can apply Newton's 1st/2nd/3rd law to justify and make claims . . . ● Using a force diagram, I can write a mathematical expression for . . . **I am able to make predictions by algebraically solving force equations.** **I can design, construct, and carry-out an experiment on an object moving at a constant acceleration using appropriate science practices.** ● I can design, construct, and carry-out an experiment to measure and/or verify on or more of Newton's Laws (e.g. force of friction, inertia, etc.).

In a typical 10-day unit, how many...



Inside the Classroom: 9th Grade Physics



Link