Physics

Scope and Sequence\*

(\*) The following scope and sequence addresses the main concepts and skills to be taught during the course of the school year; however, for a more detailed pacing on what and when skills and concepts will be taught, please refer to the grade level “Pacing Guide.”

|  |
| --- |
| **SCOPE AND SEQUENCE** |
| **Unit/Topic/Skill** | **Suggested Time Frame** | **Notes** |
| Safety and Skills:* Lab Safety & Equipment
* Measurement & Graphing:observations (qualitative, quantitative), problem solving
 | 1 week | Marking period 1 |
| Kinematics:* Constant Velocity: distance, displacement, velocity, dot diagrams, P-t graph, V-t graph
* Constant Acceleration: acceleration, p-t and v-t and a-t graphs, free fall, kinematics equations
* General Ed: Conceptual introduction to 2D motion (if time)Honors: 2D motion: vectors, horizontal and angled projectiles
 | 6 weeks |  |
| Dynamics:Types of forces (normal, tension), force diagram (Free-body diagram - FBD), Newton’s Laws, Friction, Law of Universal Gravitation, gravitational field, astronomy applicationsHonors: 2D dynamics: resolving forces, inclined planes | 4 weeks | Marking Period 2 |
| Circular Motion & Rotational Motion:Circular motion, Astronomy (Kepler, Newton), Angular motion, Torque, Moment of Inertia, Center of Mass |  | Honors Physics only(optional) |
| Impulse & Momentum:Momentum, impulse, Conservation of momentum (1D), bar charts  | 3 weeks |  |
| Work & Energy:KE, work-energy theorem, PE, energy bar charts,Harmonic motion, springs (Hooke’s Law), pendulums,Conservation of energy, Power | 4 weeks | Marking Period 3 |
| Electricity:* Electrostatics:Electric force, Coulomb’s Law, Electric fields, Electric potential difference (voltage)
* Circuits (if time):Ohm’s Law, resistance, current, voltage, schematics, Circuits (series & parallel), Combined circuits, safety devices, Power & appliances
 | 5 weeks |  |
| Magnetism:Magnetic fields, Electromagnets, Magnetic force (wires & particles), Righthand rules, Electromagnetic induction, motors & generators | 4 weeks | Marking Period 4 |
| Waves, Sound, Light:Wave characteristics & behavior, resonance, standing waves, sound, Doppler effect, light behavior, color, reflection, refraction, mirrors (plane & curved), lenses | 6 weeks |  |
| Global Challenge:Option: See cost of appliance activity in Electricity unit, part B. | 1 week | Marking Period 3 or 4Possible timing: Integrate into appropriate unit; end of year |