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| **Physics Teaching & Learning Framework (Block)** | | | | | | | | | |
| **Unit 1**  **3.5 weeks** | | **Unit 2**  **3 weeks** | **Unit 3**  **4.5 weeks** | | **Unit 4**  **3 weeks** | **SLO Exam** | **Unit 5**  **2 weeks** | **Unit 6:**  **1 week** |
| **Kinematics**  **SP1** | | **Forces**  **SP2** | **Momentum and Energy**  **SP3** | | **Sounds, Waves and Light**  **SP4** |  | **Electricity & Magnetism**  **SP5** | **Modern Physics**  **SP6** |
| **Vectors/Frame of Reference/Linear Motion (SP1a)**  *combining vectors, analysis, direction*  *-frames of reference & SYSTEMS*  ***-****linear motion*  *-rates*  **Speed, Velocity and Acceleration (SP1b)**  *-Speed (rate of motion)*  *-Relationship between velocity (speed and direction) and acceleration*  **Graphical Analysis-Slopes (SP1c)**  *-Distance/time graphs*  *-Speed/time graphs*  *-Velocity/time graphs*  **2-D motion & projectiles (SP1d)**  *-parabolic paths*  *-looking at vectors of projectile*  *-height & range calculations*  *FREE FALL* | | **Newton’s Laws of Motion (SP2a)**  *-3 laws & examples*  *-Review relationships of force, mass & acceleration*  *- weight & mass relationship*  *-Net Force*  **Free-body diagrams (SP2b,c)**  **-***Drawing and labeling forces*  **-***Normal Force, applied, gravity, friction, equilibrium* **Gravitational Force (SP2c,e)**  *-Inverse square Laws*  *-interactions of universal gravity law* **Rotational Motion (SP2d)**  *-linear and angular velocity -centripetal acceleration -centripetal force* | **Vector nature of momentum (SP2a,d)**  *-collisions*  *-Law of Conservation Momentum, open/closed systems*  *-Impulse/Momentum theorem- F∆t=m∆v*  **PE/KE Relationships & Equations (SP2b)**  **-***Law of Conservation of Energy*  *-KE motion/temperature*  *-PE gravitational/elastic*  *-mechanical energy*  **Work-Energy Theorem (SP2b)**  *-changes in KE/PE*  *-internal energy*  **Energies**  **-***mechanical, thermal, nuclear, chemical, solar, wind, water ,electrical*  *-thermal, heat & temperature*  **Power (SP2c)**  *-Work/Time*  *-rates* | | **General Properties of Waves (SP4a,b,d)**  *-diffraction, refraction, reflection, absorption, polarization*  *-interactions of waves*  **Sound & Light as model systems-SOUND (SP4c)**  *-longitudinal & transverse*  *-specific properties of sound*  *-Doppler effect*  *-calculations using v=fλ*  **Sound & Light as model systems-LIGHT (SP4e)**  *-duality of light, photon*  *-specific properties of light*  *-Doppler effect*  *-***Electromagnetic Spectrum (SP4a,b,d,e)**  *-calculations using v=fλ*  *-Light & Color*  **Optics (SP4f,g)**  *-Law of reflection*  *-lenses and mirrors*  *-Snell’s law*  *-thin lens equation*  **Light Energy**  *-photo-electric effect*  *-Einstein’s contributions.* |  | **Fundamental Property of Charge (SP5b,c)**  *-review charges*  *-behavior of charge*  *-static electricity, induction*  *-Van de Graff generator*  **Coulomb’s Law (SP5a)**  **-***field forces*  **-***inverse square law*  *-relationship of electric & magnetic forces*  **Energy conversion (SP5c)**  **-***mechanical to electrical: Dams & Generators*  *- review Law of Conservation of Energy*  **Potential Difference, Current & Resistance in DC circuit (SP5d)**  *-Ohm’s Law*  *-relationships apparent in V=IR, power*  **Circuits (SP5d)**  *-circuit diagrams*  *-series & parallel circuits*  *-equivalent resistances in series & parallel*  *-Kirchoff’s Rules*  **Motion of electric charge in magnetic field (SP5e)**  *-generators & motors*  *-transformers*  **Magnets (SP5e)**  *-field forces* | **Nuclear Physics (SP6a,b,c)**  *-radioactivity and decay, half-life*  *-Fission/Fusion*  *-energy/mass conversion and conservation of energy/matter* |
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| **Physics Teaching & Learning Framework (Yearly)** | | | | | | | | | |
| **Unit 1**  **7 weeks** | | **Unit 2**  **6 weeks** | **Unit 3**  **9 weeks** | **Unit 4**  **6 weeks** | | **SLO Exam** | **Unit 5**  **4 weeks** | **Unit 6:**  **2 weeks** |
| **Kinematics**  **SP1** | | **Forces**  **SP2** | **Momentum and Energy**  **SP3** | **Sounds, Waves and Light**  **SP4** | |  | **Electricity & Magnetism**  **SP5** | **Modern Physics**  **SP6** |
| **Vectors/Frame of Reference/Linear Motion (SP1a)**  *combining vectors, analysis, direction*  *-frames of reference & SYSTEMS*  ***-****linear motion*  *-rates*  **Speed, Velocity and Acceleration (SP1b)**  *-Speed (rate of motion)*  *-Relationship between velocity (speed and direction) and acceleration*  **Graphical Analysis-Slopes (SP1c)**  *-Distance/time graphs*  *-Speed/time graphs*  *-Velocity/time graphs*  **2-D motion & projectiles (SP1d)**  *-parabolic paths*  *-looking at vectors of projectile*  *-height & range calculations*  *FREE FALL* | | **Newton’s Laws of Motion (SP2a)**  *-3 laws & examples*  *-Review relationships of force, mass & acceleration*  *- weight & mass relationship*  *-Net Force*  **Free-body diagrams (SP2b,c)**  **-***Drawing and labeling forces*  **-***Normal Force, applied, gravity, friction, equilibrium* **Gravitational Force (SP2c,e)**  *-Inverse square Laws*  *-interactions of universal gravity law* **Rotational Motion (SP2d)**  *-linear and angular velocity -centripetal acceleration -centripetal force* | **Vector nature of momentum (SP2a,d)**  *-collisions*  *-Law of Conservation Momentum, open/closed systems*  *-Impulse/Momentum theorem- F∆t=m∆v*  **PE/KE Relationships & Equations (SP2b)**  **-***Law of Conservation of Energy*  *-KE motion/temperature*  *-PE gravitational/elastic*  *-mechanical energy*  **Work-Energy Theorem (SP2b)**  *-changes in KE/PE*  *-internal energy*  **Energies**  **-***mechanical, thermal, nuclear, chemical, solar, wind, water ,electrical*  *-thermal, heat & temperature*  **Power (SP2c)**  *-Work/Time*  *-rates* | **General Properties of Waves (SP4a,b,d)**  *-diffraction, refraction, reflection, absorption, polarization*  *-interactions of waves*  **Sound & Light as model systems-SOUND (SP4c)**  *-longitudinal & transverse*  *-specific properties of sound*  *-Doppler effect*  *-calculations using v=fλ*  **Sound & Light as model systems-LIGHT (SP4e)**  *-duality of light, photon*  *-specific properties of light*  *-Doppler effect*  *-***Electromagnetic Spectrum (SP4a,b,d,e)**  *-calculations using v=fλ*  *-Light & Color*  **Optics (SP4f,g)**  *-Law of reflection*  *-lenses and mirrors*  *-Snell’s law*  *-thin lens equation*  **Light Energy**  *-photo-electric effect*  *-Einstein’s contributions.* | |  | **Fundamental Property of Charge (SP5b,c)**  *-review charges*  *-behavior of charge*  *-static electricity, induction*  *-Van de Graff generator*  **Coulomb’s Law (SP5a)**  **-***field forces*  **-***inverse square law*  *-relationship of electric & magnetic forces*  **Energy conversion (SP5c)**  **-***mechanical to electrical: Dams & Generators*  *- review Law of Conservation of Energy*  **Potential Difference, Current & Resistance in DC circuit (SP5d)**  *-Ohm’s Law*  *-relationships apparent in V=IR, power*  **Circuits (SP5d)**  *-circuit diagrams*  *-series & parallel circuits*  *-equivalent resistances in series & parallel*  *-Kirchoff’s Rules*  **Motion of electric charge in magnetic field (SP5e)**  *-generators & motors*  *-transformers*  **Magnets (SP5e)**  *-field forces* | **Nuclear Physics (SP6a,b,c)**  *-radioactivity and decay, half-life*  *-Fission/Fusion*  *-energy/mass conversion and conservation of energy/matter* |
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