PHY101 Demo Calendar

Chapter	Topics	Demos
CH1	Units, trigonometry, and vectors	Pasco cart with vertical launching ball Skateboard and tennis ball
CH2	Motion in one dimension	Ramp with bowling ball, meter stick, colored masking tape, stop watch (http://www.multistopwatch.com/) Vernier cart with motion detector Feather and coin drop
CH3	Motion in two dimensions	Monkey banana toss
CH4	Newton's laws of motion	Vernier cart, weights and fan with motion detector Vernier friction cart and weights on incline track with force sensor Vernier friction cart on track with force sensor, pulley and 50 g weight at the end of track School bus on incline with force sensor Weights and spring scales Pasco fan cart with sail Newton's cradle Air track Wooden block with felt and slab Pulley with same weight on both sides
CH5	Energy	Vernier cart and fan with motion detector Vernier cart and spring with force sensor ($F=-kx$) Stand with 2 springs and weights, meter stick Ball on V-track Pendulum of death Tracks that transition to horizontal with ping pong balls Pasco spring loaded vertical launch with ball
CH6	Momentum, impulse, and collisions	Bolas (center of mass) Vernier carts and weights with motion sensors Two ball drop with basketball and tennis ball Ballistic pendulum
CH7	Rotational motion and gravitation	Rotational inertia demo Incline with different shapes Vernier rotating accelerometer Loop the loop track Ball with string attached
CH8	Rotational equilibrium and dynamics	Lever balance demo with weights and spring scale (for torque) Balancing bird, balancing pencils (center of gravity) Cylinder and double cone on triangular ramp Chair with dumbbells Chair with bike wheel Gyroscope Stainless steel spinning top Precession of bike wheel
CH9	Fluids and solids	Cartesian diver Magdeburg spheres with vacuum pump Tubes of various shapes joined at the bottom with colored liquid Balloon inside a vacuum jar Water tank, boat and weights Water hammer
CH10	Thermal physics	Metal ball and plate with hole, hole expands as plate gets heated Ball and ring apparatus Thermal expansion of bimetallic strip Gas laws demo with temperature monitor Thermal expansion of gas inside sealed metal sphere with pressure gauge Ethanol vapor explosion with Tesla coil Heat switch with red and blue lamps Molecular motion demonstrator
CH11	Energy in thermal processes	Rubber bands Boiling water inside vacuum jar Boiling water inside a metal container with rubber plug, with Bunsen burner Cryophorus Drinking bird Conduction of heat demo with various metal rods Laptop motherboard
CH12	The laws of thermodynamics	Thermoelectric generator with fan with Vernier temperature probe Hero’s engine
CH13	Vibrations and waves	Vernier mass on a spring with force sensor and motion detector Vernier mass on a spring with force sensor and beaker of water Simple pendulum Damped simple harmonic motion demo Slinky Speed of wave in latex tube with electronic scale Wave motion demonstrator Vortex rings
CH14	Sound	Bell inside vacuum jar Doppler effect (Buzzer on cord; buzzer has polar connection) Interference from two speakers Tuning forks and resonance boxes (there is a tunable pair) Slinky Standing wave on string Standing waves in vertical glass tubes demo Beats (Wavetek generator and Pasco speakers)