

### PHY102 Demo Calendar

Chapter	Topics	Demos
CH15	Electric forces and fields	Rods, fur and electroscope Pith balls van de Graaff generator Various metal spheres and shapes Vernier charge sensor with Faraday pail Pasco Coulomb balance Electric fields demo with hand crank generator Faraday cage and radio Small Tesla coil with Faraday cage, fluorescent tube and light bulb, syringe Conductor, semiconductor, insulator samples
CH16	Electrical energy and capacitance	Digital multimeter, battery, metal spheres, aluminum block with holes Various capacitors Computer motherboard Parallel plate capacitor and dielectric plates with multimeter Ethanol vapor explosion Discharge 30 $\mu\text{F}$ capacitor with a screw driver (charged to 6 V) 0.33 Farad capacitor, 6 V battery, switch and light bulb
CH17	Current and resistance	Various resistors Computer motherboard Silicon wafer Digital multimeter, battery, light bulb 4.7 $\text{k}\Omega$ resistor, 1 $\text{k}\Omega$ pot on Vernier circuit board with digital multimeter Resistive wire demo Resistor in liquid nitrogen LED light in liquid nitrogen Superconductivity
CH18	Direct-current circuits	Digital multimeter, battery, series and parallel light bulbs AC series and parallel light bulbs (60 W and 100 W) 0.33 Farad capacitor, 6 V battery and light bulb with Vernier voltage probe
CH19	Magnetism	Magnets and compasses Vernier magnetic field sensor 3D Magnetic field demonstrator Magnetic field viewing film Electron beam tube with magnet Tektronix CRT oscilloscope on cart Computer monitor on cart Magnetic field around a current carrying wire Magnetic force on a current carrying wire Electric motor demo Electric fan motor Stepper motor Homopolar motor with AA battery and wire loop Magnetic field inside a solenoid and a toroid Electromagnet Ferrofluid
CH20	Induced voltages and inductance	Various inductors Computer motherboard Inductor on Vernier circuit board with LC meter 3 solenoids connected to ammeter with magnet Solenoid inside larger solenoid connected to ammeter, with hand crank generator Lenz's law Metal detector Flying rings Hand crank generator with lamp Electric fan motor as AC generator
CH21	Alternating-current circuits and electromagnetic waves	Vernier circuit board and voltage probes (for resonance, phase shift between L & C) AC RL circuit with iron core AC RLC circuit with iron rod Coupled resonant pendulums Magnetron Microwave demo Infrared light source, with camera on document viewer Induction coils with light bulb Transformer (run at 100 Hz)
CH22	Reflection and refraction of light	Total internal reflection tank Light source and prism
CH23	Mirrors and lenses	Vernier optics system Geometric laser optics kit Large spherical mirror
CH24	Wave optics	Single and double slits, with clamp and stand Interference from thin films Laser and diffraction gratings Round polarizer plates Malus law with Vernier polarizer set and light sensor
CH25	Optical instruments	Vernier microscope and telescope USB microscope
CH26	Relativity	Funnel and ball
CH27	Quantum physics	Photoelectric effect demo with penlight, clamp and stand
CH28	Atomic physics	Atomic lamps demo with diffraction gratings HeNe laser tube The electric pickle
CH29	Nuclear physics	Geiger counter, Uranium doped glass marbles, Thorium gas mantle
CH30	Nuclear energy and elementary particles	Uranium fuel pellet replica Irradiated NaCl