

Physics 1B: Thermodynamics, Electricity & Magnetism

Week 1: Temperature

LIQUID NITROGEN: BALLOONS, RUBBER TUBING
BIMETALLIC STRIP
BALL AND RING
CRUSH THE CAN
ICE BOMB

Week 2: Heat

SPECIFIC HEAT

Week 3: Thermodynamics

STERLING ENGINE
STEAM ENGINE
THERMOELECTRIC ENGINE
CUTAWAY MODEL OF 4-STROKE ENGINE
FIRE SYRINGE

Week 4: Electrostatics

VAN DE GRAAFF
PITH BALLS
CHARGE TRANSFER RODS AND FUR/CLOTH
ELECTROSCOPE
GAUSS'S LAW WITH 55 GALLON DRUM

Week 5: Potential and Capacitance

VAN DE GRAAFF
CAPACITANCE BETWEEN SPHERES
PLATE CAPACITOR
LEYDEN JAR
JACOB'S LADDER
BIG CAPACITOR

Week 6: Direct Current

CHEMICAL BATTERY

Week 7: DC Circuits

SERIES AND PARALLEL CIRCUITS (OHM'S LAW)
RC TIME CONSTANT

Week 8: Magnetism

2D MAGNETIC FIELD VIEWER
3D MAGNETIC FIELD VIEWER
FERROFLUID
E_xB TUBE
FORCE BETWEEN PARALLEL WIRES

Week 9: Induction

ALUMINUM RINGS ON AC COIL
SWINGING PLATES IN MAGNETIC FIELD (GIANT VERSION)
MAGNET IN METAL TUBE
MAGNET WITH COIL
VIDEO: "THE MOTOR PRINCIPLE"
VIDEO: "GENERATION OF ELECTRICITY"

Week 10: Alternating Current

MAGNET WITH COIL
MOTOR AND GENERATOR
LRC CIRCUIT
VIDEO: "COMMERCIAL GENERATION OF ELECTRICITY"