Experiments for VCE Physics

Tainlab
Simple & versatile data-gathering systems

Unit	Topic	Experiment Title	Equipment
1.1	Wave-like properties of light	Inverse Square Law	Wide Range Light Sensor
2.1	Movement	Conversion of PE to KE Motion Graphs 1 – Walking Motions Graphs 2 – Bouncing Ball Newton's Second Law Comb Pattern for Measuring 'g' Velocity in Free Fall Force, Mass and Acceleration Force and Motion Terminal Speed Stopping Time/Distance/Force	U-Light Gate Ultrasonic Sensor Ultrasonic Sensor Mechanics Pulley U-Light Gate, Comb Pattern U-Light Gate, Comb Pattern Mechanics Pulley Mechanics Pulley Mechanics Pulley Mechanics Pulley
2.2	Electricity	Current in a Lamp Filament	Power Monitor
3.2	Aerospace	Bernoulli's Principle Thrust-Power Curves	Pressure Sensor Power Monitor, Angle Sensor
3.3	Alternative Energy	Efficiency of secondary batteries Efficiency of an electric motor (lifting weight) Variability of solar energy Efficiency of a solar panel Heating/cooling rates Thermal energy - solar heated rock pile Variability of Wind Energy	Power Monitor Power Monitor (optional U-Light Gate, Ultrasonic sensor) Power Monitor Wide Range Light, Power Monitor Sealed Thermistors Sealed Thermistor, WR Light Power Monitor
3.1	Motion in 1 and 2 dimensions	Coefficient of Friction Coefficient of Restitution Oscillation – Mass on a Spring Energy Stored in a Spring Circular Motion Terminal Speed Inelastic collisions The Analysis of Crumple Zones	Force Sensor Impulse Trigger Force Sensor, Ultrasonic Sensor Mechanics Pulley Accelerometer, Pulley, Turntable Mechanics Pulley Mechanics Pulley Accelerometer, Pulley
3.2	Electronics & Photonics	Linear Device (Ohm's Law) Non-Linear Devices (I-V Graphs) The behaviour of an npn transistor Transmission of information by light Input transducers	Electronics Panel Electronics Panel Electronics U3-2 Kit* Electronics U3-2 Kit* Electronics U3-2 Kit* *Optional PC Digital CRO or USB Mini CRO interface
3.3	Further Electronics	Behaviour of diodes and capacitors Study of rectifiers and filter capacitors	PC Digital CRO or Electronics Panel
4.1	Interactions of Light and Matter	Diffraction	Phototransistor Light Probe and Position Sensor
4.2	Electric Power	Voltage Induced in a Coil Investigating Magnets Magnetic Field Investigations	Voltage Amplifier Magnetic Field Sensor Magnetic Field Sensor
4.3	Recording and Reproducing Sound	Measuring Environmental Noise Musical Instruments and Harmonics	Sound Level Sensor Microphone or Sound Wave Capture kit*

*requires TecMaster interface (or PC with sound card and Windows 98 or above)

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