VolsTeach/CEEMS Instructional Materials Library

Technology Inventory and Item Descriptions

Vernier LabQuest I

The LabQuest I is a data acquisition device produced by Vernier Inc. that is capable of acquiring data from an array of different sensors. The LabQuest has a digital LCD screen, is water resistant, and can connect up to 5 different devices at one time. The LabQuest also includes a built in thermometer and microphone.

Quantity: **36**

Vernier LabQuest II

Vernier LabQuest II is a standalone interface used to collect sensor data with its built-in graphing and analysis application. Its wireless connectivity encourages collaboration and personalized learning. You can also use LabQuest II as a computer interface using Logger Pro software for advanced analysis and video features.

Quantity: **30**

Vernier GO! Link

The Go!Link USB sensor interface is a quick way to get started with data-collection technology. It's a single-channel interface that connects most Vernier sensors to your Windows or Macintosh computer's USB port.

Quantity: **7**

Vernier LabQuest I and II Sensors (also for GO!Link):

1. **Anemometer:** Use the Anemometer to measure wind speed in a variety of experiments. Hold the sensor in your hand to measure wind speed in dynamic environments or use the accessory rod to position it in front of wind tunnels or fans.

   Quantity: **4**

2. **Barometer:** The Barometer can be used to measure and monitor atmospheric pressure. It works well for conducting weather studies or for experiments that involve pressures close to normal atmospheric pressure. It can also be used as an altimeter if you have a portable interface.

   Quantity: **8**

3. **Blood Pressure Sensor:** The Blood Pressure Sensor is a non-invasive sensor designed to measure human blood pressure. It measures systolic, diastolic and mean arterial pressure utilizing the oscillometric technique. Pulse rate is also reported**.**

   Quantity: **12**

4. **Chest Belt Transmitter:** You can use our Chest Belt Transmitter in conjunction with the Hand-Grip Heart Rate Monitor's receiver for a hands-free option of measuring heart rate.

   Quantity: **15**

5. **CO_2 Gas Sensor:** The CO_2 Gas Sensor measures gaseous carbon dioxide in two ranges–0 to 10,000 ppm and 0 to 100,000 ppm.

   Quantity: **8**

6. **Colorimeter:** The Colorimeter is great for Beer's law experiments, determining the concentration of unknown solutions, or studying changes in concentration *vs*. time.

   Quantity: **1**

7. **Conductivity Probe:** The Conductivity Probe determines the ionic content of an aqueous solution by measuring its conductivity. This has many applications in chemistry, biology, and environmental science.

   Quantity: **8**

8. **Current Probe:** The Current Probe can be used to measure currents in low-voltage AC and DC circuits or electrochemistry experiments.

   Quantity: **8**

9. **Dual-Range Force Sensor:** Use the Dual-Range Force Sensor in a wide variety of experiments including the study of friction, simple harmonic motion, impact in collisions, or centripetal force.

   Quantity: **8**

10. **Dissolved Oxygen Probe:** Use the Dissolved Oxygen Probe to determine the concentration of oxygen in aqueous solutions in the field or in the laboratory.

    Quantity: **4**

11. **Drop Counter:** Use the Drop Counter to perform accurate, automatic titrations. Record the number of drops or calibrate the drop size to record volume of titrant added during a titration.

    Quantity: **6**

12. **EKG Sensor:** The EKG Sensor measures electrical signals produced during muscle contractions, and can be used to make standard 3-lead EKG tracings or surface EMG recordings.

    Quantity: **8**

13. **Gas Pressure Sensor:** Use the versatile Gas Pressure Sensor to monitor pressure changes of a gas in chemistry and biology experiments.

    Quantity: **8**

14. **Hand Grip Heart Rate Monitor:** The Hand-Grip Heart Rate Monitor is ideal for continuously monitoring heart rate before, during, and after exercise or while a person is stationary.

    Quantity: **15**

15. **High Current Sensor:** Use the High Current Sensor in experiments that involve currents larger than 1 A, such as solar panels, hand generators, and other alternative energy projects.

    Quantity: **8**

16. **Force Plates:** Designed to collect data on forces developed during stepping, jumping, and other human-scale actions.

    Quantity: **2**

17. **Light Sensor:** The Light Sensor approximates the human eye in spectral response. Use it for inverse square law experiments or for studying polarizers, reflectivity, or solar energy.

    Quantity: **18**

18. **Magnetic Field Sensor:** The Magnetic Field Sensor can be used to study the field around permanent magnets, coils, and electrical devices. It features a rotating sensor tip to measure both transverse and longitudinal magnetic fields.

    Quantity: **8**

19. **Microphone:** Collect data with the Microphone to display and study the waveforms of sounds from voices and musical instruments. It also works well for speed of sound experiments.

    Quantity: **8**

20. **Motion Detector (Go! Motion):** Go!Motion is Vernier's "next-generation" motion detector that connects directly to a computer's USB port—eliminating the need for an additional data-collection interface. (*requires digital cable for LabQuest I or II)

    Quantity: **8**

21. **Motion Detector (LabQuest):** The Motion Detector is used to collect position, velocity, and acceleration data of moving objects.

    Quantity: **8**

22. **Motion Detector Clamps:** The Motion Detector Clamp screws into the back of the Motion Detector, and then can be clamped to a variety of objects such as table tops, ring stands, etc.

    Quantity: **12**

23. **O_2 Gas Sensor:** The O_2 Gas Sensor can be used to monitor gaseous oxygen levels in a variety of biology and chemistry experiments. The sensor is intended for measuring gaseous, not aqueous, O_2 concentration.

    Quantity: **8**

24. **pH Sensor:** Our general-purpose pH Sensor can be used across disciplines, including chemistry, biology, middle school science, and environmental science.

    Quantity: **8**

25. **Relative Humidity Sensor:** The Relative Humidity Sensor can be used for weather studies, monitoring greenhouses, or determining days when static electrical discharges could be a problem.

    Quantity: **8**

26. **Respiration Monitor Belt:** The Respiration Monitor Belt is used with the Gas Pressure Sensor to measure human respiration. Simply strap the belt around the chest and pump air into the belt with the hand bulb, and monitor the pressure associated with the expansion and contraction of the chest during breathing.

    Quantity: **8**

27. **Rotary Motion Sensor:** The Rotary Motion Sensor lets you monitor angular motion precisely and easily. It is direction sensitive. You can use it to collect angular displacement, angular velocity, and angular acceleration data. Typical experiments include measuring moments of inertia, torque, pendula, and Atwood's machine experiments. Even though we call it a Rotary Motion Sensor, it can also be used to measure linear position to a fraction of a millimeter.

    Quantity: **4**

28. **Salinity Sensor:** The Salinity Sensor easily and precisely measures the total dissolved salt content in an aqueous solution. Measure water with a wide variety of salinities, from brackish water to ocean water, and even hyper-saline environments. You can also study how salinity affects buoyancy or monitor salinity values in estuaries where fresh water mixes with ocean water.

    Quantity: **18**

29. **Soil Moisture Sensor:** The Soil Moisture Sensor uses capacitance to measure the water content of soil (by measuring the dielectric permittivity of the soil, which is a function of the water content). Simply insert this rugged sensor into the soil to be tested, and the volumetric water content of the soil is reported in percent.

    Quantity: **6**

30. **Sound Level Meter:** The Sound Level Meter is used to measure sound level in decibels (dB). An output port on the meter records sound level data. A switch on the meter is used to select dBA or dBC weighting. The Sound Level Meter also has an LCD panel to use it as a stand-alone device. A dB range switch and a response switch provide flexibility in the standalone mode.

    Quantity: **4**

31. **Stainless Steel Temperature Probe:** The Stainless Steel Temperature Probe is a rugged, general-purpose temperature sensor that can be used in organic liquids, salt solutions, acids, and bases. Use it as you would use a thermometer for experiments in chemistry, physics, biology, Earth science, and environmental science.

    Quantity: **25**

32. **Surface Temperature Sensor:** The Surface Temperature Sensor has an exposed thermistor that results in an extremely rapid response time. This design allows for use in air and water. For temperature measurements in harsher environments that require a more durable probe, we recommend our Stainless Steel Temperature Probe.

    Quantity: **8**

33. **Turbidity Sensor:** Use the Turbidity Sensor to measure the turbidity of freshwater or seawater samples and determine water quality. Simple setup and calibration make it easy to use at the collection site or when you return to the classroom.

    Quantity: **8**

34. **UVB Sensors:** The UVB Sensor is an ultraviolet light sensor that responds primarily to UVB radiation. It is ideal for experiments using sunlight as your UV source and is the sensor recommended for the UV experiments in our lab books.

    Quantity: **8**

35. **Vernier Photogate:** Photogates allow for extremely accurate timing of events within physics experiments, for studying free fall, air track collisions, pendulum periods, the speed of a rolling object, among other things. The Vernier Photogate includes an accessory rod for mounting to a ring stand.

    Quantity: **18**

36. **Voltage Probe:** The Voltage Probe is a bipolar sensor. The black lead is grounded along with the interface, and the sensor reports the potential difference between the red lead and ground. It can be used to measure the potential in DC or AC circuits. You might also consider the Differential Voltage Probe. Multiple Differential Voltage Probes can be connected to a circuit without the use of a common grounding terminal.

    Quantity: **1**

Vernier GO!Link Specific Sensors

1. **Motion Detector (and Clamps):** Go!Motion is used to collect position, velocity and acceleration data of moving objects. Go!Motion's USB port allows for direct connection to a computer's USB port, which simplifies experiment set up.

    Quantity: **8**

2. **Temperature Probe:** Collect temperature data directly through the USB port of a computer.

    Quantity: **2**

Vernier Rotary Motion Accessory Kit

This accessory kit is used with the Rotary Motion Sensor to study the motion of a physical pendulum; the rotational inertia of disks, rings, and point masses; and the conservation angular momentum.

Quantity: **4**

Vernier Circuit Boards

The Vernier Circuit Board is a simple preconfigured board that makes it easy to connect RC, battery, and bulb circuits without a lot of loose components. Includes resettable fuse, two powering options, resistors, capacitors, an LED, lamps, binding posts to add your own components, and test leads.

Quanity: **8**

ELMO

Portable document camera.

Quantity: **2**

Digital Multimeter

Compact Manual ranging multimeters with 8 functions including Temperature.

Quanity: **10**

CS Series Portable Scale

The OHAUS CS Compact Scale is a lightweight, portable scale perfectly suited for use in laboratory, industrial, education and home use applications. Applications can include forensic testing, quality control, formulation, soil sampling, postal weighing and dietary needs.

Quanity: 200 grams – **5**

2000 grams – **5**

5000 grams – **5**

Mini Sound Level Meter

The Sound Level Meter is used to measure sound level in decibels (dB). The Sound Level Meter has an LCD panel so it is used as a stand-alone device.

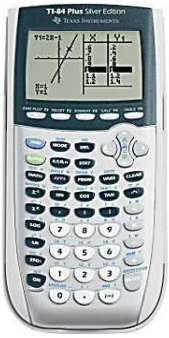
Quantity: **4**

Boostaroo Splitter and Amplifier

The Boostaroo is a portable audio amplifier that will increase the volume level of audio players without distorting. The Boostaroo is also an audio splitter that can power up to 3 sets of headphones or speakers at the same time.

Quantity: **2**

Calculators

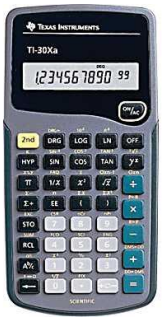


1. **Ti-84 Plus Silver Edition:** The TI-84 Plus Silver Edition graphing calculator comes with a USB cable, plenty of storage and operating memory, and lots of pre-loaded software applications (Apps) -- all to help you gain an academic edge from pre-algebra through calculus, as well as biology, chemistry and physics.
   Quantity: **30**

2. **Ti-nspire cx:** Stay mobile, continue learning - Transfer class assignments from handheld to computer (PC & Mac®). Complete work outside of school using student software. On the desktop at home or a laptop on the bus, at the library, coffee shop...wherever.
   Quantity: **60**

3. **Ti-nspire CAS:** Ideal for Pre-Algebra, Algebra 1 & 2, Trigonometry, Geometry, Pre-calculus, Statistics, Business & Finance, Biology, Physics, Chemistry, Calculus, AP Statistics, AP Physics, AP Calculus, and Linear Algebra.

   Quantity: **30**



4. **Ti-30xa**: This one-line battery operated model performs basic scientific and trigonometric functions.

   Quantity: **40**