



Republic of the Philippines  
**VISAYAS STATE UNIVERSITY**  
Visca, Baybay City, Leyte

## PURCHASE REQUEST

PR No.: **GF-2022-10-02161**

Date: **10-25-2022**

Dept./Office: **DepStat**

Category: **Laboratory  
Equipment**

Section/End-User: **Monna E. Bengalan**

Project Title/Code: **Completion and Refurbishing of  
the Old Library Annex Building (Tech and Scientific  
Equipment)-2023**

Funding Source: **General Fund - CO**

Item #	Item Description	Unit	Qty	Unit Cost	PAR/ICS	Total Cost
1	<b>60X Plan Fluorite Oil Immersion Objective with Iris, 1.25-0.65 NA, 0.12 mm WD, Michelson Interferome</b>	lot	1	725,000.00		725,000.00

### Specification:

1. 60x Oil Immersion Objective Lens -

#### Description:

- 60X Plan Fluorite
- Oil Immersion Objective with Iris,
- 1.25-0.65 NA
- 0.12 mm WD

2. Michelson Interferometry

- Designed for Educational, Demonstration, and Classroom Use
- Complete Photonics Kit Includes All Hardware Except Variable Power Supply for the Thermal Expansion Experiment (12 VDC, 2 A)
- Extensive Manual and Teaching Materials Provided
- Easy to Assemble and Use
- Choose from Educational Kits Containing Imperial or Metric Components

3. Optical Tables- 1 pc

#### Specifications:

- Matte Black Anodized Finish Reduces Unwanted Reflections
- Grid of Through-Tapped 1/4"-20 (M6) Mounting Holes
- Metric Aluminum Breadboard

- Dimensions: 750 mm x 750 mm x 12. 7 mm

4. LG4- Laser Safety Glasses- 1 pc.

Specifications:

- Dark blue lenses
- 12% Visible Light Transmission
- Universal Style
- Optical Density (190- 400 nm= 5+, 625-850 nm= 4+, 662-835 nm=5+, 633= 5+)
- LB Rating (625- 670 nm= I LB4, 625- 830 nm= DR LB4, >670- 800 nm= I LB5

5. LG6 Laser Safety Glasses- 1 pc.

Specifications:

- Clear lenses
- 93% Visible Light Transmission
- Universal Style
- Optical Density (190- 398 nm= 7+, 9000-11000 nm= 7+)
- LB Rating (190- 315 nm= DLB7, 9000-11000 nm=DILB3)

6. LG1 Laser Safety Glasses- 2 pcs. each

Specifications:

- Light green lenses
- 59% Visible Light Transmission
- Universal Style

.7. LG10 Laser Safety Glasses- 1 pc.

Specifications:

- Amber lenses
- 35% Visible Light Transmission
- Universal Style

2	<b>Analytical Balance DPhys</b>	unit	1	225,000.00		225,000.00
<b>Specification:</b>  Description: <ul style="list-style-type: none"> <li>• 210g x 0.0001g (with Internal Calibration)</li> <li>• 3.5" pan</li> <li>• Maximum Capacity= 210 g</li> <li>• Readability=0.0001 g</li> <li>• 220 V</li> </ul>						
3	<b>Arduino Starter pack and sensors</b>	lot	1	90,000.00		90,000.00
<b>Specification:</b>  9 units of Arduino Starter Pack which Includes:						

- Arduino Projects Book (170 pages) x1
- Arduino UNO board rev.3 x1
- USB cable x1
- Breadboard x1
- Easy-to-assemble wooden base x1
- 9v battery snap x1
- Solid core jumper wires x1
- Stranded jumper wires x2
- Photoresistor [VT90N2 LDR] x6
- Potentiometer 10kilohm x3
- Pushbuttons x10
- Temperature sensor [TMP36] x1
- Tilt sensor x1
- alphanumeric LCD (16x2 characters) x1
- LED (bright white) x1
- LED (RGB) x1
- LEDs (red) x8
- LEDs (green) x8
- LEDs (yellow) x8
- LEDs (blue) x3
- Small DC motor 6/9V x1
- Small servo motor x1
- Piezo capsule [PKM17EPP-4001-B0] x1
- H-bridge motor driver [L293D] x1
- Optocouplers [4N35] x2
- Transistor [BC547] x5
- Mosfet transistors [IRF520] x2
- Capacitors 100nF x5
- Capacitors 100uF x3

- Capacitor 100pF x5
- Diodes [1N4007] x5
- Transparent gels (red, green, blue) x3
- Male pins strip (40x1) x1
- Resistors 220 ohm x20
- Resistors 560 ohm x5
- Resistors 1 kilohm x5
- Resistors 4.7 kilohm x5
- Resistors 10 kilohm
- Resistors 1 megohm x5
- Resistors 10 megohm x5

**9 units of 37 in 1 Sensor Kit For Arduino includes:** • KY-001 Temperature sensor module

- KY-002 Vibration switch module
- KY-003 Hall magnetic sensor module
- KY-004 Key switch module
- KY-005 Infrared emission sensor module
- KY-006 Small passive buzzer module
- KY-008 Laser sensor module
- KY-009 3-color full-color LED SMD modules
- KY-010 Optical broken module
- KY-011 2-color LED module
- KY-012 Active buzzer module
- KY-013 Temperature sensor module
- KY-015 Temperature and humidity sensor module
- KY-016 3-color LED module
- KY-017 Mercury open optical module
- KY-018 Photo resistor module
- KY-019 5V relay module

- KY-020 Tilt switch module
- KY-021 Mini magnetic reed modules
- KY-022 Infrared sensor receiver module
- KY-023 XY-axis joystick module
- KY-024 Linear magnetic Hall sensors
- KY-025 Reed module
- KY-026 Flame sensor module
- KY-027 Magic light cup module
- KY-028 Temperature sensor module
- KY-029 Yin Yi 2-color LED module 3MM
- KY-031 Knock Sensor module
- KY-032 Obstacle avoidance sensor module
- KY-033 Hunt sensor module
- KY-034 Automatic flashing colorful LED module
- KY-035 Class Bihor magnetic sensor
- KY-036 Metal touch sensor module
- KY-037 Sensitive microphone sensor module
- KY-038 Microphone sound sensor module
- KY-039 Detect the heartbeat module
- KY-040 Rotary encoder module

4	<b>Electrostatic Charge Experiment (EX-5532)</b>	unit	1	215,768.00		215,768.00
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**Specification:**

Student experiment measuring charge of objects through direct contact and induction. This complete solution is designed for use with PASCO Capstone Software. **WHAT'S INCLUDED**

- 1x Basic Electrometer
- 1x Charge Producers and Proof Plane
- 1x Faraday Ice Pail
- 1x Conductive Spheres
- 1x Conductive Shapes



• 1x Electrostatics Voltage Source						
5	<b>Faraday's Law of Induction Experiment (EX-5541A)</b>	unit	1	173,675.00		173,675.00
<b>Specification:</b>  The complete solution for examining the principles of magnetic flux and conservation of energy.  <b>What's Included</b> <ul style="list-style-type: none"> <li>• 1x <a href="#">Induction Wand (EM-8099)</a></li> <li>• 1x <a href="#">Large Rod Base (ME-8735)</a></li> <li>• 2x <a href="#">45 cm Stainless Steel Rod (ME-8736)</a></li> <li>• 1x <a href="#">Multi-Clamp (ME-9507)</a></li> <li>• 1x <a href="#">Voltage Sensor (unshrouded) (UI-5100)</a></li> <li>• 1x <a href="#">PASPORT 2-Axis Magnetic Field Sensor (PS-2162)</a></li> <li>• 1x <a href="#">PASPORT Rotary Motion Sensor (PS-2120A)</a></li> <li>• 1x <a href="#">Variable Gap Magnet (EM-8618)</a></li> </ul>						
6	<b>Inverted Fluorescence Microscope with camera</b>	unit	1	931,784.00		931,784.00
<b>Specification:</b> <ul style="list-style-type: none"> <li>• LWD Plan Fluarex 10x and plan phase fluarex 20x/40x objectives</li> <li>• 4-position filter block</li> <li>• Mechanical stage</li> <li>• Includes a USB camera (30 frames per second) and specialized microscopy software for PC, Mac, and Linux</li> <li>• Life Science applications</li> <li>• Observation of tissue cultures, living cells</li> <li>• Brightfield, phase contrast, and fluorescence</li> <li>• Long working distance IOS plan achromatic objectives</li> <li>• Revolving quintuple nosepiece</li> <li>• 5 W LED transmitted illumination</li> <li>• 100 W mercury vapor lamp for fluorescence</li> </ul>						
7	<b>Kirchhoff's Rules Experiment (EX-5538)</b>	unit	1	60,663.00		60,663.00
<b>Specification:</b>  The complete solution for examining AC and DC circuits to validate Kirchhoff's Laws.  <b>WHAT'S INCLUDED</b> <ul style="list-style-type: none"> <li>• 1x Resistor Capacitor Inductor Network</li> </ul>						

- 3x Voltage Sensor (unshrouded)
- 2x Current Probe
- 8x Banana Plug Cord Sets, 30 cm Length

8	<b>Micropipette single- channel adjustable volumes (Autoclavable) + Desktop or table top autoclave ster</b>	lot	1	130,000.00		130,000.00
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**Specification:**

6.1. Micropipette single- channel adjustable volumes (autoclavable)- PhP 80,000.00

1. 1 pc (0.1- 2.5 uL)
2. 1 pc (0.5 – 10 ul)
3. 1 pc (2- 20 ul)
4. 1 pc (10- 100 ul)
5. 1 pc (20- 200 ul)
6. 1 pc (100- 1000 ul)

6.2. Desktop or table top autoclave sterilizer- PhP 50,000.00

**Specifications:**

- Power supply: AC 220V/50Hz
- 24 L stainless steel
- Time setting: 1--99 Minutes
- Temperature setting: Rt +5~126°C
- Working pressure: Along with temperature change

**Descriptions:**

- Easy operation, safe and reliable
- The sealing ring is made of silicon rubber.
- Two safety valves, self-adjustment function. It is well sealed and effectively prevents steam leakage.
- Over temperature & over pressure auto-protection.
- Power switch, user can control the operation easily.
- Immersion type electric heating pipe, thermal efficiency is high, stainless steel material tube.
- Steam-water inner circulation system: No steam discharge and the environment for sterilizing will be clean and dry.
- Double groove pressure gauge, could clearly indicate, convenient observation, reliable performance.
- When at lower water level, or at the end of heat preservation time, have buzzer alarm, timing control type will automatically stop heating .

9	<b>Millikan Oil Drop Apparatus and Accessories</b>	lot	1	648,895.00		648,895.00
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**Specification:**

1. 1 SET AP-8210A

**Specifications:**

- [1] Clear droplet observation
- [2] Low droplet drift, essential for success with Millikan's classic experiment
- [3] Thermistor Connectors: Attach an ohmmeter to monitor chamber temperature. A thermistor is embedded in the bottom plate of the chamber.
- [4] 3 Chamber Level Positions: Ionization ON, Ionization OFF, and Spray (allowing air to be displaced when oil droplets are inserted).
- [5] Droplet Viewing Chamber: Unique design minimizes droplet drift due to heat from droplet illumination and outside air currents.
- [6] Viewing Scope: 30X, bright-field, erectimage microscope with focusing ring.
- [7] Reticle Focus: Separate reticle focus and precision etching provide sharp, easy-to-view grid lines with 0.5 mm major and 0.1 mm minor divisions.
- [8] Plate Voltage Connectors: Connect a power supply to charge the plates inside the chamber.
- [9] Plate Charging Switch: Allows the operator to charge the plates to either polarity or ground the plates. The switch box is separate to minimize vibration
- [10] Bright LED Lamp: Combined with a convex lens and heat reflecting mirror, the droplet illumination system delivers maximum light and minimal heat to the droplet area.
- [11] Lamp Adjustment Screws: Position the lamp to be focused precisely on the area where the droplets are viewed.
- [12] Bubble Level: Bull's-eye level makes sure apparatus is level.
- [13] Rod Stand Mounts and Screws: Designed to mount on PASCO's Large Rod Stand. Allows the apparatus to be reduced to eye level.
- [14] Thermistor Resistance Table: A convenient table provided for quick conversion of resistance values to Celsius.
- [15] Focusing Wire: When placed in the chamber, the focusing wire allows the lamp to be aligned so the light illuminates the center of the chamber, and allows the eyepiece to be focused on the center of the chamber.
- [16] Minimum Electric Field Distortion: A 0.5 mm diameter droplet entry hole in the top capacitor plate has a negligible effect on the electric field.
- [17] Ionization Source: The Thorium-232 alpha source can be activated by the switch on the side of the chamber. The source allows the charge on the oil droplets to be changed.
- [18] Droplet Hole Cover: Prevents additional droplets from entering the chamber once the experiment has started.
- [19] Polished Surfaces: Polished surfaces on the plate spacer minimize absorption of light (and heat) through the chamber walls.
- [20] Electrical Connection: Electrical connection to the top plate.
- [21] Easy Cleaning: The condenser system easily disassembles for cleaning and inspection.
- [22] Maximum Plate Voltage: 500 VDC
- [23] Light Source: Cool LED
- [24] Reticle Line Separation: 0.5 mm major divisions; 0.1 mm minor divisions



[25] Plate Spacing: 7.62 mm

[26] Plate Diameter: 60 mm

**2. SE-9786A Basic Digital Multimeter**

**3. SF-9585A High Voltage Power**

**4. SE-9750**

Banana Plug Cord-Red (5 Pack)

**5. SE-9751**

Banana Plug Cord-Black (5 Pack)

10	Oscilloscope and Function Generator	lot	1	200,000.00		200,000.00
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**Specification:****2 units of Oscilloscope**

- Bandwidth: 70MHz or higher
- Sampling Rate (Max.): at least 1GSa/s
- Channels: at least 2
- Memory Depth (Max.): 2Mpts
- Trigger Types: at least Edge, Pulse
- I/O: at least USB Device, LAN,
- Probe (Std): at least 2 pcs passive probe
- Display: at least 5 inch TFT LCD

**2 units of Function Generator**

- At least Sine, Square, Triangular waveforms
- At least 0.1 Hz resolution of Sine, Square, and Triangular waveforms
- At least 20 MSa/s sampling rate
- USB device interface for remote control and waveform editing
- Maximum Frequency Range Sinewave: 25 Mhz or higher
- Minimum Frequency Range Sinewave: at least 0.1Hz

11	<b>Temperature Controller (forDPHys)</b>	unit	1	320,000.00		320,000.00
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**Specification:**

## Specifications

Temperature Control System for Recording Chamber (heat only); one channel DC 12V /2.5 A, two thermometers.

## Including:

- One H-OBJ Microscope Object Mantle Heater. Connects directly to HOT-1. For connection to napi temperature controllers the adapter cable HOBJ-DIN is required
- One H-OBJ-DIN DIN cable for H-OBJ, HCS or HEATINGPAD for connecting to napi controller (TC4-CABLE)

12	<b>Two channel programmable syringe pump + High vacuum pump, bell jar, and vacuum pump kit accessories</b>	lot	1	250,000.00		250,000.00
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**Specification:**

Two channel programmable syringe pump- PhP 100,000.00

## Descriptions:

- Holds 2 Syringes up to 60 mL each, can be different sizes
- Both syringes operate in sync. Independent syringe operation, including "Push-Pull", available with the [Dual Pump System](#).
- Infusion rates from 1.436  $\mu\text{L/hr}$  (1 mL syringe) to 7515 mL/hr (60 mL syringe)
- Easy-to-use keypad interface
- One-click program upload from "Pumping Program Generator" spreadsheet
- Space Saving Chassis: Foot print size of only 5 3/4" x 8 3/4"  
Won't take up unnecessary space on your laboratory or production bench

High vacuum pump, bell jar, and vacuum pump kit accessories

**Description:**

- LAV-3/G 3cfm vacuum pump
- 1 EA Acrylic Pump Plate
- 1 EA 6"x11" Glass BellJar
- 5' High Vacuum Tubing
- 2 Hose Clamps
- 1 Quart High Vacuum Pump Oil
- 3 EA Balloons
- 1 EA Petri Dish

13	<b>UV-Vis Spectrometer with fiber optic cable</b>	unit	1	409,215.00		409,215.00
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**Specification:**

**SE-3607**

**Specifications:**

- [1] Spectral scans from 180 to 1050 nm
- [2] Intuitive, software-based operation
- [3] Built-in tools for routine analyses
- [4] One-click light and dark calibrations
- [5] Clear marking to indicate proper cuvette positioning
- [6] Dimensions 19.5 × 24.5 × 7.0 cm
- [7] Light Source:Deuterium (UV) Tungsten (Vis)
- [8] Detector: 2048 CMOS linear (0.3nm reporting interval)
- [9] Wavelength Range 180 – 1050 nm
- [10] Grating:500 lines/mm
- [11] Signal to noise 2000:1
- [12] Optical Resolution 1.5 nm

- ### Fiber Optic Cable Specifications:

- TOTAL




4,380,000.00

Checked by:

TWG - Laboratory Equipment

**ALICIA M. FLORES**

HEAD, BUDGET OFFICE

Signature: Printed Name: Designation:	Requested by:	Noted by:	Approved by:
	 <b>MONNA E. BENGALAN</b> END USER	 <b>MAY ANN E. PALEN</b> UNIT HEAD, PROJECT LEADER	 <b>EDGARDO E. TULIN</b> PRESIDENT, VSU