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Page 1: Please review the following:

Q1

Contact Person:

Name **Miriam Simpson**
Email Address **miriam.simpson@gcccd.edu**

Q2

Department:

Physics

Q3

Title of Request:

Advanced Physics Lab Equipment for Articulation, Equity, and Experiential Learning

Q4

Location of Request:

H Building

Q5

Type of Request (Select one):

Equipment: Tangible property with a purchase price of at least \$200 and a useful life of more than one year. Technology related items such as hotspots, computers, tablets should be requested through the College Technology Committee

Q6

Description of Request: Please provide a description of the supplies, equipment, furniture or other request. When making your request, please be as specific as possible and include information such as make, model, manufacturer, color, quantity, etc.

This request seeks funding for 2-4 setups of each critical lab apparatus necessary to maintain articulation with UCSD and provide hands-on, inquiry-based learning for our growing and diverse student body. These setups are essential for creating equitable access to high-quality STEM education and ensuring that students are prepared for transfer-level coursework and careers. The requested items include:

Franck-Hertz Experiment System (2-4 setups)

Purpose: Demonstrates the quantization of energy levels in atoms, foundational to modern physics.

Vendor: PASCO Scientific.

Details: Complete Franck-Hertz Apparatus, including mercury tubes, power supplies, and measurement tools.

Cost per setup: Approximately \$7,500.

e/m Apparatus (2-4 setups)

Purpose: Allows precise measurement of the charge-to-mass ratio of the electron, a cornerstone experiment in physics.

Vendor: PASCO Scientific or equivalent.

Details: Magnetic coils, electron tubes, and power sources for controlled, high-precision experiments.

Cost per setup: Approximately \$5,000.

Spectroscopy Equipment (2-4 setups)

Purpose: Facilitates high-resolution spectral analysis, critical for labs exploring atomic and molecular spectroscopy, aligning with UCSD's lab standards.

Details: High-quality diffraction gratings, spectrometers, and light sources for advanced spectroscopy studies.

Cost per setup: Approximately \$4,000.

PASCO Optics Systems: Single and Double-Slit Accessories (2-4 setups)

Purpose: Enables comprehensive wave optics experiments, including interference and diffraction studies.

Vendor: PASCO Scientific.

Cost per setup: Approximately \$2,500.

Q7

Estimated Cost:

Franck-Hertz System
 Quantity 2-4
 Cost per Setup \$7,500

e/m Apparatus
 Quantity 2-4
 Cost per Setup \$5,000

Spectroscopy Equipment
 Quantity 2-4
 Cost per Setup \$4,000

PASCO Optics Accessories
 Quantity 2-4
 Cost per Setup \$2,500

Total Estimated Cost
 \$38,000 - \$76,000

Q8

Respondent skipped this question

Please attach quote, if available

Q9

Total Cost of Ownership: Your requested item may incur ongoing expenses. What are the ongoing expenses associated with your request? If there are ongoing expenses, please detail how you plan to support these costs with your existing budget by completing the text boxes below.

| | |
|-------------------------------|---|
| Initial Cost of Item | \$38,000 - \$76,000 depending on the number of setups. |
| Service Agreements/Warranties | PASCO equipment typically includes standard warranties; extended options available. |
| Maintenance | Minimal; occasional bulb replacements for spectroscopy tools, periodic calibration for e/m and Franck-Hertz. |
| Upgrades | Future enhancements may include digital data acquisition tools to modernize setups. |
| Impacts to Staffing | Streamlines lab preparation for staff and ensures compliance with articulation standards. |
| Replacement Costs | Expected lifespan of 10+ years with proper maintenance. |
| Other | Supports articulation, equity, and growth in STEM programs. |

Q10

Justification of Request: The justification of the request is a key area to focus on. The ROC encourages you to strengthen your request by providing a robust rationale detailing all relevant criteria. When writing the rationale, keep in mind that those reviewing the justification may not be familiar with your department and needs. Providing detailed information and context can help clarify the need for your request. Please select the applicable criteria(s) and provide the details of how the criteria(s) relate to your request.

Health and safety,

Critical need,

Program expansion,

Impact on student success and access,

Innovation,

Equity and Antiracism,

Provided details::

Health and Safety: Modern equipment ensures safer operation for high-voltage and precision experiments. Outdated or insufficient setups increase risks to students and faculty. Critical Need: UCSD Articulation: Meeting UCSD's rigorous lab standards requires these experiments to be available at high quality and scale. Without them, our students risk losing transfer pathways and falling behind peers at other institutions. Enrollment Growth: Physics FTES has doubled since 2018 (from 48.09 FTES in 2018 to 79.27 FTES in 2024), necessitating additional equipment to accommodate more students. Program Expansion and Innovation: Expanding lab capacity with multiple setups allows for smaller lab groups, fostering deeper student engagement and hands-on learning. Introduces cutting-edge technology to prepare students for research and industry roles. Impact on Student Success and Access: Ensures equitable access to essential experiments, enabling all students to succeed regardless of class size or schedule. Directly improves retention and success rates by providing hands-on learning that reinforces theoretical concepts. Equity and Antiracism: Aligns with our mission to create equitable STEM opportunities, particularly for underrepresented groups. Enhances lab accessibility and reduces barriers to participation in high-quality physics education.

Q11

Program Goal: Please identify the program goal(s), as stated in your current annual or comprehensive program review, that this request would help your program achieve. Provide a brief explanation of how it would do so.

This request supports key program goals, including:

Articulation Compliance: Ensures alignment with UCSD's requirements for transfer-level physics labs.

Lab Redevelopment: Adds capacity for in-person labs, addressing the increasing demand and modernizing our offerings.

Equity and Student Success: Expands access to essential experiments, fostering inclusive and equitable learning environments.