#8

COMPLETE

Collector:	Web Link 1 (Web Link)
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Page 1: Please review the following:

Q1

Contact Person:

Name	**Keenan Murray**
Email Address	**keenan.murray@gcccd.edu**

Q2

Department:

Engineering

Q3

Title of Request:

Arduino kit purchasing

Q4

Location of Request:

Cuyamaca College

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.

60 Arduino Uno Student Kits from Arduino website:
https://store-usa.arduino.cc/products/arduino-student-kit?gad_source=1&gclid=EAIaIQobChMI2JOqwM6bigMVyY7CCB1XGAfyEAAYASAAEgIPmfD_BwE#looxReviews

Q7

Estimated Cost:

$4,572

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	**$4,572**
Service Agreements/Warranties	**0**
Maintenance	**0**
Upgrades	**0**
Impacts to Staffing	**0**
Replacement Costs	**0**
Other	**0**
Total	**$4,572**
Amount available in departmentbudget to support this requestSmarkey:	**0**
Remaining requested amount	**$4,572**

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.

Critical need,

Program expansion,

Impact on student success and access,

Equity and Antiracism,

Provided details::

In Spring 2025, the engineering program will offer eight lab sections, with up to six of those sections utilizing our Arduino kits. These kits, originally purchased through grant funding that is no longer available, have been instrumental in providing hands-on, project-based learning experiences for our students. However, over the past few years, the expanded use of these kits across multiple courses has led to significant challenges. Many components have gone missing, several Arduinos have broken due to wear and tear, and the organization and oversight of the kits have been inadequate due to the absence of a dedicated lab technician. The impact of these challenges was evident this year in one of my classes, where students had to spend valuable class time scavenging through the kits to find the components they needed. Despite our efforts, we were able to assemble fewer than 30 functional kits. With the increasing demand for Arduino kits across more lab sections and the ongoing issues of wear and tear, it has become clear that without proper maintenance and organization, we will need to request new kits every few years. This recurring need highlights the critical importance of both additional funding to replace and expand our supply of Arduino kits and the necessity of lab technician support to ensure their proper maintenance and organization. Investing in these resources will not only enhance the quality of our lab experiences but also ensure that students can fully engage with the hands-on learning opportunities that are central to their academic and professional success.

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.

Goal 1: Increase student success in sophomore-level engineering courses by providing enhanced support for ENGR-100 and all other lab-based classes.

We hypothesized that integrating project-based and hands-on learning into our introductory course would enhance student engagement and retention while addressing access and success equity gaps. This approach has proven effective, as our program has successfully eliminated race and ethnicity access equity gaps. However, we acknowledge that there is still significant work to be done to close other equity gaps, particularly in supporting students throughout their entire academic journey.

Arduino kits play a central role in several of our courses, providing students with practical experience in programming and circuit building tailored to their course needs. For instance, mechanical engineering students are introduced to programming and basic circuits in our Introduction to Engineering & Design course. They then advance their skills in our MATLAB course, which also incorporates Arduino programming, and ultimately apply this knowledge to build more complex circuits in our new Mechatronics course. This progressive use of Arduino kits not only reinforces foundational knowledge but also helps students develop a deeper understanding of programming and circuit design.

Ensuring increased and readily available access to Arduino kits is essential for fostering student retention and success. With consistent access to this equipment, students can seamlessly apply the knowledge gained from previous courses without the added concern of equipment availability. This continuity enhances their learning experience, boosts their confidence, and prepares them for advanced engineering challenges, ultimately supporting their academic and professional growth.