

# **PHS Course Proposal: Physical Computing & Robotics**

School Board Meeting ~ December 15, 2020



# Proposed Timeline

First Reading of Course Proposal - December 2020

Second Reading of Course Proposal - January 2021

Approved proposals move forward for developing Course of Study

Staff Review of Course of Study

School Board First Reading (Course of Study) - April 2021

School Board Second Reading (Course of Study) - May 2021

Course of Study submitted to UC for A-G approval, if appropriate.

# About the Course

Physical Computing and Robotics is an introductory level (year-long) two-part course focused on physical computing and robotics.

Part 1 - provides students a hands-on projects-based environment in building, maintaining and integrating computer systems using **Raspberry Pi** and its components. Students will learn how to control **cameras**, **sensors** and **GPIO** to do creative projects using **Python** programming language.

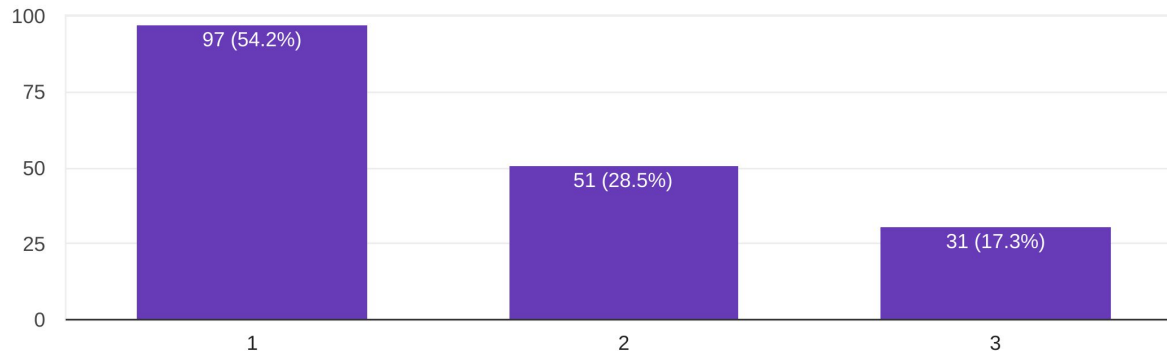
Part 2 - provides students an introduction to robotics and computing including modeling, designing, planning, and programming; hands-on robotics projects using motors and sensors. Students will use Lego EV3 (or an equivalent VEX system) as the primary robotics equipment and RobotC (or Python) for the programming language.

# Rationale & Identified Need

Currently, no course that focuses on hardware and the physical part of computing. Over 200 Piedmont youth currently participate in some level of robotics training and competition.

New engineering lab will provide more space and donations will help fund the course.

Physical Computing and Robotics—This year-long introductory course is designed in two parts. Part 1 of the course is designed to provide students a han...; and, "3" if you are Likely to enroll in the course.  
179 responses



# Students & Prerequisites

Intended Grade level is 9-10th grade

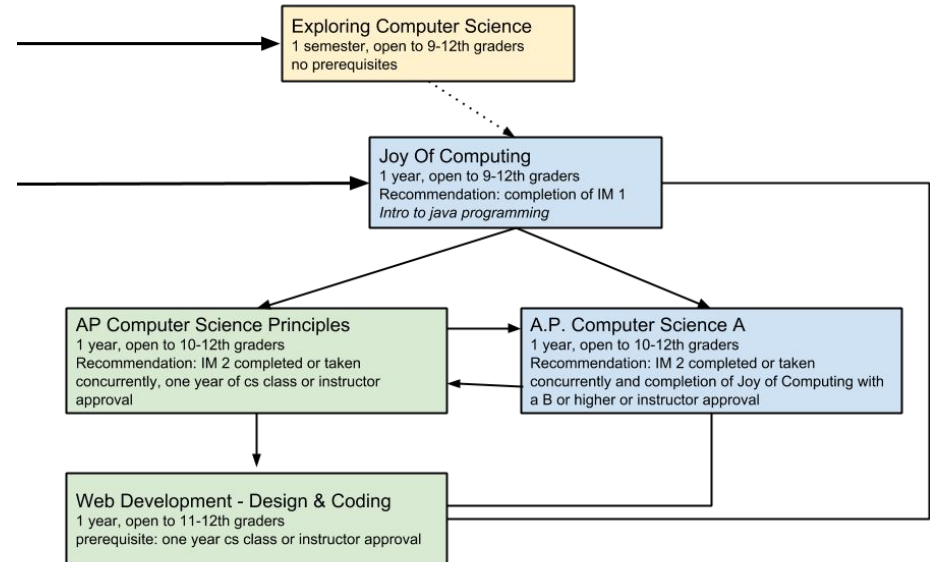
There are no prerequisites for this course.



# Effects on the Department & School-Wide

We currently offer six sections of Joy of Computing. We think this course will mainly draw students from this course as the material in Joy of Computing can already be familiar to some students. Thus, this course will provide more course options to our entry level students.

We do not anticipate this course drawing students away from other departments.



# Projected Costs

## Software:

~~\$ 300 - RobotC (Python is free): One year classroom license: \$300~~

## Hardware (Reusable. One time cost.):

\$ 3,000 - Raspberry Pi kits (one classroom set): 30 pieces (\$100 each)

\$ 1,500 - SenseHAT (one classroom set): 30 piece (\$50 each)

\$ 1,500 - GPIO kits: a set of 30 (\$50 each)

\$ 600 - SD Cards: 30 additional pieces (\$20 each)

\$13,000 - VEX V5: A set of 10 (\$1300 a set)

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**\$19,600 + tax + shipping**

**\*Prices and quantities are subject to change.**

**\*\*Zero cost for curriculum.**

# Board Questions?



# Projected Costs (old version)

## Software:

\$ 300 - RobotC (Python is free): One year classroom license: \$300

## Hardware (Reusable. One time cost.):

\$3,000 - Raspberry Pi kits (one classroom set): 30 pieces (\$100 each)

\$1,750 - SenseHAT (one classroom set): 35 piece (\$50 a piece)

\$1,200 - GPIO kits: a set of 12 (price unknown)

\$1,050 - SD Cards: 35 additional pieces (\$30 each)

\$5,280 - EV3 Kit (or equivalent): A set of 12 (\$440 a set) \*

\$9,600 - Tetrix Sets: a set of 12 (\$800 a set)\*

\*Less expensive alternatives are available

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**\$19,600 + tax + shipping**