



Petersburg High School

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Brad King
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Proposed Elective Course

Course Title: **Makerspace Engineering and Design**

Instructor: Dustin Crump

Course Category: Elective

Grade Level: 9-12

The course I would like to present would be called **Makerspace Engineering and Design**. In this course, students would design and build interactive systems using robotics, physical computing and user-centered design... reusing the framework of most computer science/design courses (the INPUT > PROCESS > OUTPUT > FEEDBACK loop)

Q1: Students will be building interactive systems with our new Computer Science & LEGO AI Kits

Q2: Students will be designing systems and interfaces for users (layouts for websites on desktops, laptops, tablets/iPads and Smartphones/iPhones) using the design software Figma, resulting in them designing a new controller app for their LEGO system from Q1

Q3: Students would be using Arduinos (programmable microcontrollers) and TinkerCAD (a prototyping software that allows them to design physical models and program the microcontrollers to give them power. This quarter will end with them building and programing their own interactive device (such as a reaction timer, alarm system, light controller, game buzzer, or whatever they may come up with along the way)

Q4: Students will build a physical prototype of something of their choice using LEGO, Arduino/TinkerCAD (or a combo of both), then design a control interface (such as an app) for their prototype

After this class students will have:

- built a working interactive system
- designed user interfaces
- an understanding of how systems function
- connected digital and physical ideas