

# Designing a Hobbieist Embedded Microcontroller Laboratory

Team 12

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# 1 Team Members

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## 2 Overview and Orientation

The current design for the laboratory entails multiple lab benches configured to ease in the development of software systems for popular microcontroller and embedded systems. Included in the laboratory will also be a station for the fabrication of new custom embedded systems.

### 2.1 Design and Goals

The purpose of this project is to design an Embedded Microcontroller Laboratory. Due to the open endedness of the problem, we created restrains to bound the solution space into a smaller set. The following outlines our goals in designing the Embedded Microcontroller Laboratory.

1. Create a lab to be used by hobbieists in the field of Embedded Microcontrollers
2. Ease of use is number one priority, followed by cost
3. Have a moderately wide selection of popular and available embedded microcontrollers
4. Keep a wide supply of modules/dongles/slaves/shields that can ease the speed of development and inspire creativity

### 2.2 Layout

We designed the lab with ease of use in mind. The room was designed to have room for six workstations, a custom fabrication station, a general work table, and part shelves.

Each workstation will have it's own computer preloaded with all the needed software to run the programs. The stations will also be equiped with the necessary equipment to develop and work on embedded devices, such as programmers, simple sensors, resistor/capacitor boxes,

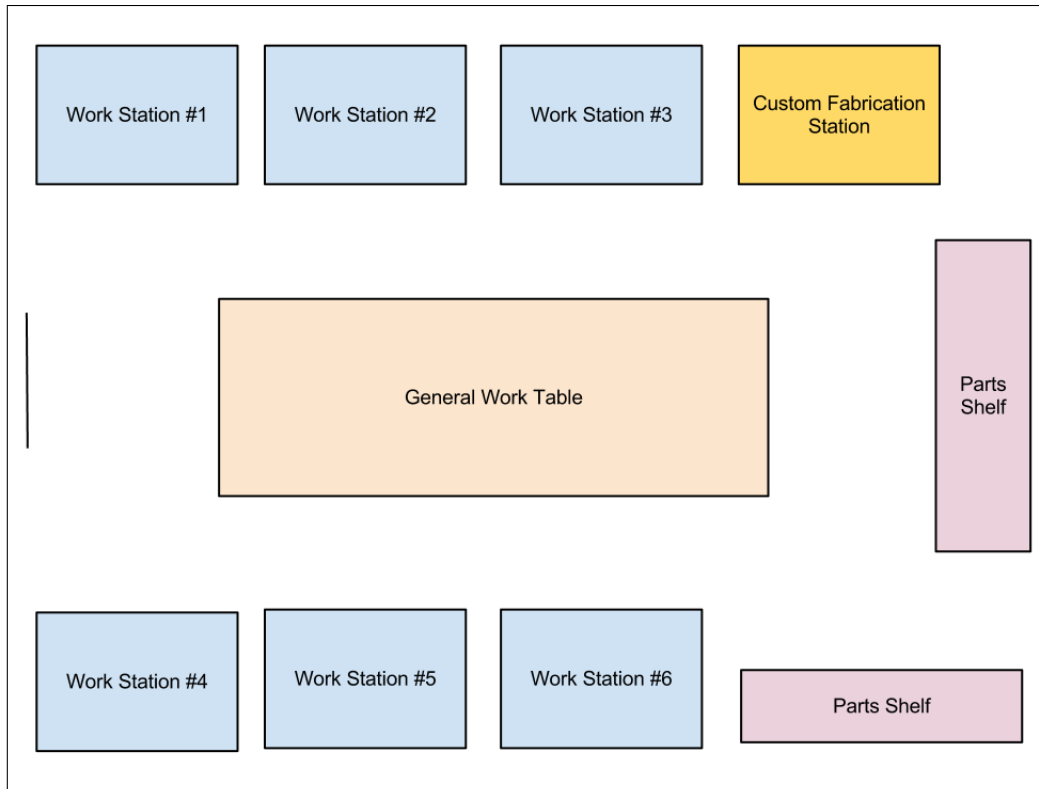


Figure 1: Layout design of the laboratory

hobbyist motors and other actuators along with soldering iron/solder and breadboards.

The custom fabrication station will be used in the development of custom devices for when a standard board won't work. The station will contain specialized software and equipment for fabrication that the other stations won't have.

The general work table is reserved for Air Force hobbyist generals. It'll be used when more work space is required, or for holding meetings. By default the general work table shouldn't have anything except for a conference phone.

## 2.3 Cost

Budgeting is a major concern for this project. While we don't want cost to get in the way of creativity and design, we want the price of the lab to be as low as possible.

Rough estimates are about 10k for the complete lab.