Microcontroller Fundamentals with Arduino

Sponsored by: *inventr.io and GVSU School of Computing*

Competition Overview and Components

Teams (of either one or two) will participate in a sci-fi space shuttle repair challenge and will be rewarded with points for the amount of repairs they can make within a 2 hour period. Challenges will range from wiring a single LED on a breadboard to writing a *small lunar adventure* game using an OLED display. Students will learn fundamentals of prototyping, Arduino (C) programming, and breadboard circuit design. During the two-hour period you will have 10 *shuttle* repairs to complete to be able to fly your *spaceship* home. Each repair will come with broken code and broken wiring diagrams that need to be fixed for things to work properly.

Teams will be provided with coding libraries, official Arduino language reference documentation, and basic circuit information about each component. No prior knowledge in any of the subjects or technologies is expected or required. The team that completes the most (or all) repairs in the least amount of time wins the competition.

Team Composition

Individuals or teams of 2 students (preferred and encouraged) can register for this competition.

Skills

Prior knowledge or experience in Arduino coding or circuits is expected to compete in the advanced Arduino competition

Scoring

Participants will earn points as they complete each *repair*. 1 *repair mission* completed = 10 points. There will be a total of 100 possible points, with each point slightly harder than the last. You must complete *repairs* in ascending order and cannot skip a *repair*. If two teams receive the same amount of points the winning team will be decided based on who received that point amount first.

Schedule

See competition schedule for competition time and place. The time will include competition overview, competition work and turn in. Check in will begin 15 minutes before the competition begins.

Resources

A student laptop with Internet access, the official Arduino IDE, a USB-A port (or adapter) and a working Web Browser software are required. Firefox and Chrome browsers are recommended. Online, web-based tools can be used to solve the challenges. A basic electronics kit will be provided at the time of the event.