

Intro to Sensors Outline, Class 1

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- Introductions, orientation (20 minutes)
 - backgrounds & interests
 - brainstorm about sensor types, applications
 - * virtual reality: hand position, body position
 - * art example; Brigid's wearable proximity dress, Micha's performance art/bracelets/hoodie
 - overview of Class 1, Class 2 topics
 - orientation to handout
- Switches & Resistors (20 minutes)
 - Activity: basic lightbulb circuit example
 - Activity: add a switch
 - Concept: introduce circuit notation, key symbols
 - Concept: how does current flow in a network? what is voltage?
 - Activity: add different-valued resistors, potentiometers
 - Concept: $V=IR$, $P=IV$, series & parallel circuits
- Sensors are mostly switches or resistors (20 minutes)
 - switches: photodiode, knifethrow, push button, tilt switch, beam-break, reed switch
 - resistors: thermistor, photoresistor, potentiometer, load cell
 - (but some aren't): windspeed, rainfall, relative humidity, oxygen ppm
 - Activity: pick a reed switch or push button to put in your circuit

 - brief show & tell/knowledgeshare

* Some circuits light up when the switch closes, and some turn off.

- Hands-on: Building more circuits (50 minutes)
 - Activity: practice building sensors in Fig. 2, 3a
 - Concept: transistor pinout & schematic
 - Concept: matching resistor values to sensors
- Wrap-up (10 minutes)
 - Clean up, have students put their names on breadboards for next class
 - What did we learn?
 - What didn't work?
- Extra Topics
 - revisit sensor types with an individual project focus
 - LEDs & directional components
 - practice circuit diagrams, math