Basics of Payload Design for Academic Ballooning: A High Altitude Journey			
Kit			
Total	$47.35		Participants will be expected to attend workshop using their own personal computer and will be expected to download and install a predefined set of applications and files on their computer prior to the workshop sessions. Applications to install are: Arduino IDE, Eagle CAD, Glueviz with Anaconda, Atom text editor, and companion files for use during the workshop.
Part	Unit Cost	Links	
Arduino budget pack	$29.95	link	
AM2320 Humidity Sensor	$3.95	link	
MPL115A2 Barometer	$7.95	link	
Shifting MicroSd breakout	$5.50	link	

Workshop Revised Schedule		
Time (15 min blocks)	Day 1	Day 2
15 min	Workshop overview & intro video. What us HAB? What do we do?	Micro Sd card & light dependent resistor
30 min	Background electrical theory. Ohms law, and power	Humidity
45 min	Practical activity: DMM, breadboard, arduino volt meter	Barometer
1 hr	Led & button theory, interfacing with the arduino	Temperature
15 min	Practical activity: led & button & TTL visualization	Integration, combine circuits & premade program
30 min	[Build Buffer]	System testing: Data collection
45 min	15 min break	System testing: Test data plotting
2 hr	Battery imperfections & loading effects	15 min break
15 min	Regulation types and efficiencies	System testing: Performance measurement
30 min	Battery technologies & capacity/performance	Operating environment (prior launch data)
45 min	Start demo design. Experiment question. What data to record?	System testing: Battery lifetime estimation
3 hr	Block Diagram, storage format & analysis plan	System testing: System capabilities
15 min	End of day session	Micro controllers vs Micro processors
30 min		Facilities available in the arduino UNO platform
45 min		Associated programming functions
4 hr		[Build Buffer]
15 min		15 min break
30 min		Electrical Protection theory
45 min		Eagle
5 hr		Mechanical protection & housing considerations
15 min		Housing fabrication methods & considerations
30 min		C++ Arduino programming workflow
45 min		Program flow control & logic
6 hr		Debugging