Distribution and Usage of Parts in ENGR 122

The capstone experience for first year engineering involves the design of a smart product that makes use of the robotics platform (Boe-Bot or Arduino) and other parts that students can purchase or check out from the University. The freshman coordinator maintains a library of 75 plus parts and sensors available for student check out. The parts library makes it convenient for students to try out motors, output devices, sensors and other items. This service is free to students as long as they return undamaged parts; students are not responsible for non-working parts with no apparent physical damage.

Key points regarding parts usage are provided below:

- The curriculum is designed to build the confidence and competence needed for independent implementation of sensors and devices. For the most part, students implement working prototypes without significant faculty assistance.
- A total of 799 parts were checked out to 165 teams between April 2008 and May 2010.
- Team size varies between 2 and 4 students with an average size of 3.5 students.
- The average number of parts checked out per team was 4.8.

The library of parts available to students is posted to the Living with the Lab website as part of the ENGR 122 course materials. Figure 1 shows the parts library which is maintained in the freshman coordinator's office.

Figure 1 – Parts are maintained in plastic bins and bags in the freshman coordinator's office.

Other parts are available to students though vending machines stocked with items needed to facilitate projects, as shown in Figure 2. Representative items available in the vending machines include resistors, capacitors, rivets, zip ties, LEDs, IR LEDs, IR receivers, screws, safety glasses, relays, transistors, wire and fuses. Students purchase these items at a price level set to cover the cost of the items and the labor required to stock the machine.

Figure 2 – One of two vending machines used to provide inexpensive supplies to students.

Students checking out parts from the freshman coordinator are required to complete the form shown in Figure 3. Students who borrow parts that are not returned receive an incomplete in the course until the parts are returned. Students almost always return their parts on time, and those who don't, return their parts after a friendly reminder from their instructor or the freshman coordinator.

Sensor Check-Out Sheet

Student teams can borrow sensors and other items to incorporate into their smart products to reduce the total project cost and to speed up the prototyping process. All items will be checked out through Dr. Hall whose office is Bogard Hall 255. Initial check-out will be completed on certain dates and times, as discussed in class. Students can come by during Dr. Hall's office hours later in the prototyping process to check out items or to return any unused items. You must obtain your instructor's approval prior to checking out an item.

It is important that only the items that are to be incorporated into prototypes be kept during the prototyping period. If you borrow a sensor and later find that it won't be needed for your prototype, please return it to Dr. Hall so it will be available to others. If you damage or lose a sensor during the prototyping period, you should go ahead and take steps to have it replaced. If you want to avoid having to disassemble your prototype after the project is finished, you can also purchase a replacement part.

Fill out the information below for each item to be borrowed.

Item Name:	Updated Item Cost:
Part Number:	Web Link for Current Pricing Information:
What is the Name of the Product You are Designing?	
What does the item sense or do and why do you need it?	

I understand that I am responsible for the returning the item listed above in good working order. I will replace the item if I fail to return it for any reason or if it is damaged while it is checked out. I understand that failure to return the item in working order will result in a failing grade in ENGR 122 as well as a University hold being placed on my registration and records.

_____ _____ _____

ENGR 122 Section Printed Name of Instructor Instructor Signature

_____ _____

Printed Name of Responsible Student Student Signature

Student Number _____ Email: _____ Phone: _____

To be filled out by Dr. Hall when the item is returned:

Sensor Return Date:	Dr. Hall's Signature:
Notes:	

Figure 3 – Sheet submitted to freshman coordinator when checking out parts.