1.) Can I cut the plastic pieces provided in our kit?

No, you are responsible to return the kit and all of its components as they were issued to your team. Please use caution while cutting and altering any piece you purchase on your own.

2.) Can I have parts for my AEV made on the 3-D printers in 308?

Yes, but there are constraints on this. It can only be 1 part and it must meet the constraints set in the Design Your Own Object Solidworks HW assignment. This will be explained and introduced at the end of Solidworks, but you can start early on it.

3.) Are there any limits to add-ons?

(a) Remember that you need to model the AEV system in Solidworks. Keep that in mind when picking out pieces (“Can we as a team model this AEV in Solidworks?”).
(b) The AEV Controller cannot touch metal.
(c) No extra components can be permanently adhered to parts we provide in the kit. Tape would only be OK as long as you can remove it with no damaging effects to the components you return.
(d) It is preferred to use the support arms provided for specific safety measures considered in design (i.e., length of the arm is such that the AEV does not hang low and hit anyone and the material is sturdy enough to hold the AEV on the track.)

4.) Can I buy my own motors? If so, are there any limitations or concerns?

Yes, but be careful about compatibility. The motors need to be limited to 2 amps each and the battery only supplies 7.4 V. You will need to justify why you would use motors outside of what we provide. The motors we provide are capable of moving any size vehicle you design with no problem.

If you want to create a set-up that produces more thrust then you should be looking at propellers (and aerodynamics) and not the motors. This will be illustrated in class as well, but consider writing simple AEV code to test the AEV using the 2-inch propeller and 3-inch propeller. There is a big difference in the amount of thrust produced.

5.) Can we add a jet engine on our AEV? Like, how about a really small one?

NO.
6.) Can I use an electromagnet?

Unfortunately, this is a ‘NO’. The current sensor on the AEV is sensitive to magnetic fields and if you use an electromagnet this could interfere with current readings and cause lots of problems. This is why we require a clearance space between the Arduino and the caboose. We use a tiny magnet for the AEV-Caboose connection and if the Arduino Controller is too close to the tiny magnet, it interferes with the current sensor. If anyone has any ideas, we would still like to hear how you would want to use this.

7.) Can I just buy an Arduino board from EEIC for me to keep?

They cannot be bought from our department, but they can be purchased online. The controller board we use for the Arduino was made in house. This is not something we sell but if you would like to try to replicate it, you can refer to the AEV Controller Manual. There are also other options besides the board and chips that we provide.

8.) Where can I buy my own Arduino? Is that even allowed?

You can buy your own Arduino chip (and search for servos, etc.) here: http://store.arduino.cc/index.php?main_page=index&cPath=11

You can buy your own Arduino chip to use, but you are still responsible for keeping the current Arduino chip and maintaining its condition (i.e., if the Arduino nano board is damaged while trying to remove is from the controller board you are responsible for replacing it per the AEV Kit Policy that you signed).

9.) Where can I buy vehicle parts?

You can buy parts at most hobby shops/stores in town and fit them to your vehicle. Here are a few, but we have no affiliation or strong recommendation for any of them: Michael’s Arts & Crafts, Hobby Lobby, Tower Hobby, Hobbyland, and Robbie’s Hobbies.

Hurricane Hobby Shop in Lewis Center (near Polaris) has been helpful in the past: http://www.hurricanehobbyshop.com/hurricanehobbyshop.com/Welcome.html

You can buy your own Arduino at Microcenter (on Bethel Road); they have a HUGE selection on Arduinos and various materials you can use with them. But, to make the Arduino work you need the board that EEIC has created to work with the Arduino Board and the Toshiba Motorchips. PLEASE ASK YOUR INSTRUCTOR BEFORE PURCHASING ANY PARTS!