Rubrics for Project Plan and Budget
Due: Friday, October 16, 2015

Now that your project is somewhat constrained, it is time to determine the most important thing that you need to answer before proceeding to a full scale design. This is your prototype.

So, you need to perform a preliminary design of your prototype to answer this question. The important thing is to determine the most important components that don't exist at UALR and prepare a budget to purchase those items.

Once I have the budgets in place, I will start getting the money to cover them. Most of your task is to give me the ammunition I need to justify the budget.

Rubrics:

1. preliminary design plan – this is a detailed design plan, including schedules, that indicates what you're going to deliver by the end of the semester. What question(s) will you be answering?
2. Items needed and cost – what do you need in materials and supplies to do the task? If possible, on all purchased items, give me a choice of at least two alternatives. If there are available items around UALR that you can use, you can put more emphasis on the things that we don't have.
3. Budget Justification – why do you need the items to be purchased? What alternatives have you considered? Why won't something available at UALR do the trick … why do you need something new?
4. On purchased items, especially more expensive items, be prepared to lock into those items for next semester's full scale design. So, if you buy a $500 item this semester, don't expect to get another $500 item next semester when you say, "oops. The first purchase wasn't what we really needed."

Here's an example of a prototype.
Prototype: I need to figure out how to measure air temperature and turn a fan motor to adjust the temperature.
Question 1: I need to learn how to program a particular microcontroller.
Question 2: I need to figure out how to interface a thermocouple to a microcontroller and what parameters of a thermocouple are needed in my design (range, environmental conditions)
Question 3: I need to learn how to design interface electronics for a motor in the 10-20 amp range.
Question 4: I need to figure out how to design ducting to move air from my source to an exhaust.

Items needed and cost

- Microcontroller
- Air Temperature sensor
- Fan motor
- Interface electronics for sensor and motor
- Ducting for fan
- Controllable heat source

Justification: Although I can locate a microcontroller at UALR, the final design is going to require more computing power than anything at UALR, and I need to spend this semester learning to use this microcontroller. $75

I can find thermocouples in-house. I'm not sure what I need out of a temperature sensor, so I want to spend this semester figuring out what I need and how to interface it. $0

I can find motors in-house, but my final needs are going to require a motor purchase. I'm going to spend this semester figuring out the precise needs, but need to purchase a motor near the end of the term. $25

I need certain motor control ICs that aren't available in-house. $15

Total expenditures: $115