

EE31 Junior Design
Spring 2019
Project Design Phase 01B
Pre-Studio

Assignment Date and Due Date: check Assignment/Due Date Listing

Pre-studio assignments are to be recorded in your Bound Lab Notebook and reviewed by the instructor at the start of class before starting your design work.

If you are not sure what to do on this assignment, ask your instructor or TAs.

1. What is a Bot Specification? What needs to be contained in the spec?
2. Where do you find the information to put into the bot spec?
3. What are the three items that MUST be in a specification?
4. What does your team do if it doesn't know the information, or cannot find it, for a bot spec?
5. What do you do if you don't know the answer? Do you really do this in your engineering? When did you start doing it? What was your epiphany?
6. What team problems is your team having? What is working? What is not? What could be improved?

Bot spec:

1. What is a customer requirement?
2. What are the customer requirements for this project?
3. What does the systems engineering diagram look like? Please draw your system engineering diagram showing each input and output for each modules and how each modules connects to each other. Be sure to identify the input signal, the output signal, and the functionality of the module. The functionality of the module is what the module does to transform
4. Who is the customer? Why does the customer need your swarmbot? What problem does it solve for the customer? Map the need to the technology being used to solve the problem.
5. How many customer requirements are there?
6. How many technical requirements are there?
7. Map the technical requirements to their customer requirements
8. What does the customer want? Did you ask the customer what they wanted?
9. What is the problem you are trying to solve? Write a one or two sentence description.
10. What has all this to do with junior design?

Task Questions:

1. What part of the team bot spec tasks are you planning to take responsibility for?
2. What will you need to learn to complete the team bot spec tasks for which you have taken responsibility?

Creating A Specification

Specifications have a value, a dimension, and a tolerance. For example: 75 ohms +/- 10% or 65 inches + 2 inches, -1 inch.

List all parameters that must be met by the system or subsystem being specified.

Use the word "is" to define a specification. Specifications are expressed as "is" must be fully and properly met. "The power output is 12.6 W +/- 0.4 W (typical)." "The module flashes a green LED four times. The illumination duty cycle is 40 percent. The period is 1 second."

A simple list of parameters that must be considered is:

- Acceptable dimensions (length, width, and height) and weight
- Range of performance conditions that are acceptable to meet the project description. Place tolerances on the performance of the system or sub-system.
- Energy needed and powered-on life (battery life)
- Transmission frequencies and protocol
- Workmanship standards applied to the product
- Indicator LED color and intensity, and alarm volume and duration

Define the subsystems or modules, their inputs, outputs, functionality, and performance.

What others do you need to complete your spec?