

## Individual Three Week Plans - Detailed Design Phase - P17027

**Derek:**

### **From Preliminary Detailed Design Phase:**

1. Create project level pseudo-code **\*COMPLETED\***
  - a. When: Early during phase
  - b. Time Estimate: 2 hours
2. Pick & Purchase battery **\*\*Not completed: reason: pump not purchased**
  - a. When: Early during phase
  - b. Time Estimate: 3 hours to pick, and ~1 week to arrive
3. Generate code to test specific components **\*\*Completed for components on hand**
  - a. When: Mid Phase
  - b. Time Estimate: 4 hours
4. Test power requirements of components **\*\*Completed for components on hand**
  - a. When: Once components arrive
  - b. Time Estimate: 2 hours
5. Test battery with other components **\*\*Not completed: battery not purchased yet**
  - a. When: Late phase
  - b. Time Estimate: 4 hours

### **For Detailed Design Phase:**

1. Pick & Purchase battery
  - a. When: Once pump is purchased
  - b. Time Estimate: ~3 hours
2. Purchase All other electrical Components
  - a. When: Midphase
  - b. Time Estimate: ~3 hours
3. Test Components
  - a. When: Late phase
  - b. Time Estimate: 6 hours
4. Characterize pump power consumption
  - a. When: Midphase
  - b. Time estimate: 4 hours
5. Start soldering components to protoboard
  - a. When: Late Phase
  - b. Time estimate: 4 hours
6. Run breadboard test with pressure sensor
  - a. When: during phase
  - b. Time estimate: 3 hours

## Duy Tran:

### From Preliminary Detailed Design Phase:

1. Pick & Purchase Arduino \* **COMPLETED**\*
  - a. When: early phase
  - b. Time Estimate: 4 hours
2. Design Layout for control panel \* **COMPLETED**\*
  - a. When: early during phase
  - b. Time Estimate: 3 hours
3. Pick & Purchase Actuators \* Not Completed\*
  - a. When: during phase
  - b. Time estimate: 2 hours
4. Brainstorming on hardware design schematics\* **COMPLETED**\*
  - a. When: during phase
  - b. Time estimate: 4 hours
5. Start testing Arduino with initial code\* **COMPLETED**\*
  - a. When: mid phase
  - b. Time estimate: 4 hours

### For Detailed Design Phase:

6. Complete all Electricals Schematics
  - a. When: During phase
  - b. Time Estimate: 4 hours
7. Testing hardware for pump
  - a. When: once pump is arrive
  - b. Time Estimate: 3 hours
8. Indicate all risks could relate to electrical hardware during testing
  - a. When: during phase
  - b. Time estimate: 2 hours
9. Complete testing on valves, switches and push button for control panel
  - a. When: during phase
  - b. Time estimate: 5 hours
10. Run breadboard test with pressure sensor
  - a. When: during phase
  - b. Time estimate: 3 hours

**Giordan Meyer:**

**From Preliminary Detailed Design Phase:**

1. Pick and purchase pump \*not completed\*
  - a. When: early on in phase
  - b. Time Estimate: 4 hours
2. Pick and Purchase Flow Control
  - a. When: mid phase
  - b. Time Estimate: 4 hours
3. Design Gripper Tilting Mechanism \*obsolete\*
  - a. When: mid phase
  - b. Time Estimate: 3 hours
4. Test Pump Performance
  - a. When: late in phase
  - b. Time Estimate: 5 hours
5. Test Flow Control Performance
  - a. When: Late in phase
  - b. Time Estimate: 5 hours

**For Detailed Design Phase:**

1. Test Pump Pressure Performance
  - a. When: As soon as pump is received
  - b. Time Estimate: 1 hour
2. Waterproof Pump
  - a. When: After pump performance metrics have been determined
  - b. Time Estimate: 2 hours
3. Choose and Order Other Flow Parts
  - a. When: Early in Phase
  - b. Time Estimate: 2 hours
4. Determine if Pump Needs to be Enclosed
  - a. When: Mid-phase, if pump cannot be properly waterproofed
  - b. Time: 1 hour
5. Characterize Flow Out of Bladders
  - a. When: Mid phase
  - b. Time Estimate: 2 hours
6. Create/find representative CAD model of pump
  - a. When: First few days
  - b. Time Estimate:

## **Jon Greeley**

### **From Preliminary Detailed Design Phase:**

1. Create mold & prototype soft actuator limb for testing/feasibility **\*Other Teammate**
  - a. When: starting 1st week of phase
  - b. Time Estimate: 4 hours
2. Brainstorm component layouts for container **\*Not Completed, Next Phase**
  - a. When: 1st week of phase
  - b. Time Estimate: 2 hours
3. Develop preliminary CAD models **\*Completed**
  - a. When: 1st & 2nd week of phase
  - b. Time Estimate: 6 hours
4. Assist with testing of actuator pressure limits **\*Completed**
  - a. When: 2nd week
  - b. Time Estimate: 4 hours
5. Review BOM and prepare for purchasing **\*Completed**
  - a. When: 3rd week of phase
  - b. Time Estimate: 2 hours

### **For Detailed Design Phase:**

1. Test actuation pressure of second soft actuator prototype
  - a. When: Friday 11/4
  - b. Time Estimate: 1 hour
2. Complete Extension Mechanism Model
  - a. When: 1st week
  - b. Time Estimate: 2 hours
3. Collaborate to design actuator/extension/hydraulic interface connection
  - a. When: 1st week
  - b. Time Estimate: 4 hours
4. Determine how to mount each component in the housing
  - a. When: 2nd week
  - b. Time Estimate: 4 hours
5. Update BOM with complete list of components
  - a. When: 3rd week
  - b. Time Estimate: 2 hours

## **Matthew Landolfa**

### **From Preliminary Detailed Design Phase:**

1. Select and Purchase Polymer Material for Prototyping \*COMPLETED\*
  - a. When: 1st-2nd Week of Phase
  - b. Time Estimate: 1-2 Hours (Selection) 3-5 Days (Shipping & Receiving)
2. Select, Model and Simulate a Minimum of Three Iterations of Soft-body Design \*MODELING COMPLETED\*
  - a. When: 1st Week of Phase
  - b. Time Estimate: 6 Hours
3. Select and Acquire Components for Extension System, (Main Body Hardware) \*not completed\*
  - a. When: 1st Week of Phase
  - b. Time Estimate: 2 Hours (Selection) 1-3 Days (Shipping & Receiving)
4. Test Selected Material for Stress Limits \*not completed beyond preliminary stage\*
  - a. When: Immediately following material acquisition (2nd-3rd Week)
  - b. Time Estimate: 4 Hours
5. Conduct Feasibility Analysis on Sub-System Integration/Coupling \*underway\*
  - a. When: 3rd Week of Phase
  - b. Time Estimate: 2 Hours

### **For Detailed Design Phase:**

1. Collaborate to design actuator/extension/hydraulic interface connection
  - a. When: 1st week
  - b. Time Estimate: 4 hours
2. Finalize gripper limb/mold design
  - a. When: 2nd Week
  - b. Time Estimate: 12 Hours
3. Collaborate to complete all mechanical CAD drawings
  - a. When: 3rd Week
  - b. Time Estimate: 12 Hours
4. Design and Model enclosure for control panel
  - a. When: 2nd Week
  - b. Time Estimate: 10 Hours
5. Design and Characterize Full Gripper Assembly Function/Operation
  - a. When: 3rd Week
  - b. Time Estimate: 6 Hours