🛠️ MEC 427 Advanced Sensors and Actuators Challenges 1-5

🗓️ Date & Time

- **Report Date:** 10-25-2025
- **Time Block:** 10-20 – 10-25
- **Time Spent This Session:** 3 hours / 30 minutes
- **Cumulative Time on Project:** 12 hours / 30 minutes

🗂️ Project Overview

- **Project Title:** Challenge 1 - 3 Water Level Sensor and Actuator System
- **Project Objective:** Assemble and program a water level sensor and actuator system using the Adafruit CPX microcontroller to control water flow based on sensor input.
- **Current Phase:** Setup Phase

🔧 Task / Activity Details

- **Module / Subsystem:** Construction of water tower
- **Specific Task or Activity:** Assemble water tower structure using PVC pipes and rubber tubing
- **Time Spent on This Task:** 3 hours / 30 minutes
- **% of Total Time:** 100%
- **Resources Used:**
  - **Hardware:** PVC pipe, rubber tubing, Adafruit CPX microcontroller, capasitive sensors, servo motor, 3D printed pinch valve
  - **Software:**
  - **Tools:** 3D printer
  - **Documentation:**

📈 Progress Tracking

- **Task/Module Completion Status:** e.g., 15% complete
- **Project Completion Status:** 15% complete
- **Milestones Reached:** Gatered all materials, assembled water tower structure
- **Blockers or Issues:** Pinch valve design needs refinement to ensure proper sealing
- **Next Steps / Planned Actions:** Refine pinch valve design and reprint, begin programming CPX microcontroller to read sensor data and control servo motor

📦 Results & Deliverables

- **What Was Achieved:** Assembled the water tower and tested prototype of pinch valve
- **Artifacts Created:** 3D printed pinch valve prototype, water tower assembly
- **Validation / Testing Outcomes:**
- **Changes Made to Design or Approach:**

📑 Narrative & Observations

> *Use this section for detailed descriptions, reflections, and context. Include technical notes, emotional observations, and rationale for decisions.*

- **Narrative Summary:** Furstrated with the delay in needing to reprint the pinch valve. But the tower should work for my project. Hoped to get to programming this week. Will look over challenge 4 and 5 while waiting for the print to finish.
- **Technical Notes:**
- **Lessons Learned / Insights:**
- **Emotional/Workflow Reflections (optional):**