IED - 1 per day

Objective: Compare your understanding of how things are industrially manufactured to the actual manufacturing process.

Procedure: Identify an object in your house. Detail what it is made of, how many parts it is made of, and how you think those parts are made and assembled (if assembly is required). Then research online how the object was made according to the internet. Detail how the parts are made and assembled according to the internet. Compare your idea of how it was made to how it is actually made. Answer the following questions. Repeat for each day out.

1. How close are you to guessing the material the object was made from?

2. Did you identify all of the needed parts to assemble the object?

3. Write out the step by step instructions of how you thought the parts were made.

4. Write out the step by step instructions of how it is actually made according to the internet

5. Compare how you thought the object was made to how it is actually made

6. Why do you think the object was made this way?

7. What kind of tests do they do to the object during inspection?

8. If you could, what would you change about the production process?

9. How effective is the object at being affordable, durable, and environmentally friendly?

10. How effective is the object at achieving its job?

POE - 30 mins per day

From your notes, design and solve a problem from each of the following categories:

Simple Machines: AMA, IMA, Work of Levers, Wheels, Pullies, Inclined planes, Screw, Wedge.
Gears, Sprockets, Pullies
Electricity: Series Circuits, Parallel circuits
Energy Sources
Robot System Designs for common Problems

CEA

In Minecraft, develop a residential building that has a square footage of 2500 ft^2. The building should have at least 3 bedrooms, 2 full bathrooms, and a living room - dining room - and kitchen area. Additional rooms may be added but you cannot add on to the square footage. Garage, and porch do not count into the square footage but second floors and basements do.

The building should have:
Foundation
All of the required rooms
Doors and windows
A roof

Calculations required:
Dead load and live load of roof
Dead load and live load of floor below roof
Force travel paths
Magnitude of lateral loads (wind, rain, earthquakes)
Beam loading of your roof only
Heat transfer between your house if you keep the inside at 70 and outside 90 fahrenheit.
The cost to lay your foundation

The total weight of your house

This should take up to 10 days spending 40 minutes a day:

Days 1-3: build the house
Days 4-5: Calculate dead load and live loads
Day 6: Force paths and lateral loads
Day 7: Beam load of one beam
Day 8: Heat Transfer
Day 9: Cost of foundation
Day 10: weight of house and pressure ground must exert to support it.

CSP/CSA:

Go to Python Practice Problems on Google and complete one problem per day in your tier level.