The background of the entire page is a dense, overlapping collage of colorful sticky notes. The colors include shades of blue, pink, yellow, and green. Each sticky note has a large, bold, black question mark printed on it. The sticky notes are scattered across the page, creating a vibrant and curious atmosphere.

ROBOTICS ALLIANCE PROJECT DESIGN GUIDE

Assigned Reading &
Reflection Questions

READING ASSIGNMENT #1

- ❑ Sections 2.1–2.38 (pages 10–30)
- ❑ Reflection Questions (listed on following slides)
- ❑ 5 points per question x 12 questions = 60 points total

QUESTION 1: CNC ROUTER

- Sketch a sample part to create on a CNC router out of 1/4" polycarbonate sheet.
 - Hand sketch
 - Onshape part studio
 - Onshape formal drawing

QUESTION 2: CAD TO CAM TO CNC

- ❑ Define CAD and CAM
- ❑ Write out procedural steps for taking a part from CAD to CAM to manufacture

QUESTION 3: 3D PRINTER

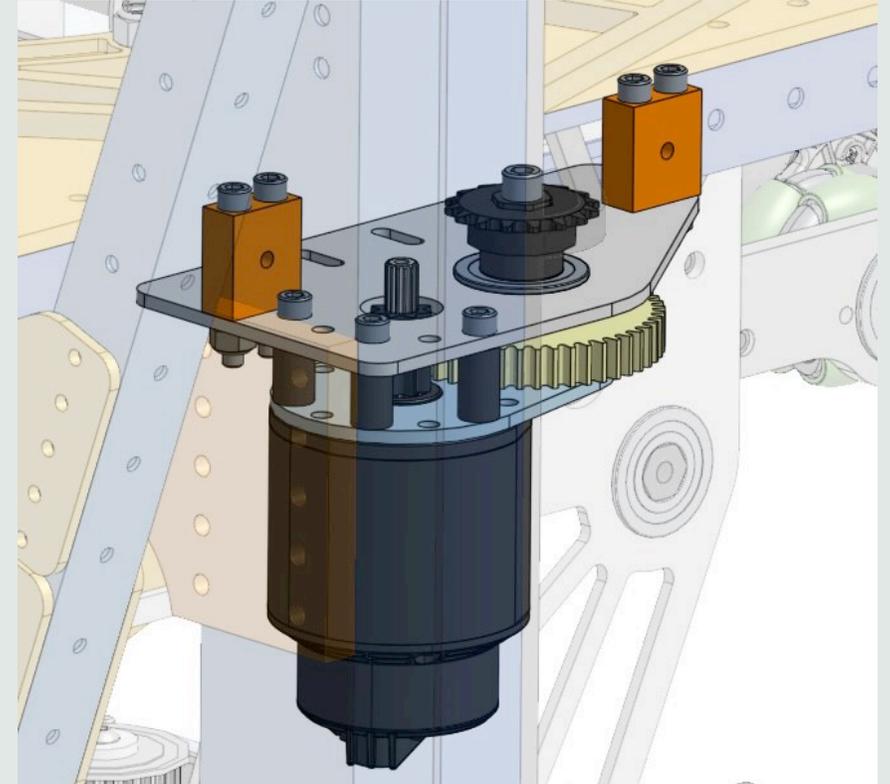
- Write out procedural steps for taking a part from CAD to the following 3D Printers:
 - Airwolf EVO 22
 - Markforged

QUESTION 6: TOLERANCING

- ❑ How should you adjust dimensions based on tolerancing for 3D printed parts?

QUESTION 7: BILL OF MATERIALS

- ❑ Create a list of bill of materials for the gearbox that powers the turret ([CAD Model](#))
- ❑ Use Excel spreadsheet template (attached in Canvas)
- ❑ Include costs, quantities, part numbers and links



QUESTION 7: SUBMIT SCREENSHOT OF SPREADSHEET HERE

QUESTION 8: BOLT SIZE NOTATION

- What do the numbers in 10-32, 8-32 and $\frac{1}{4}$ -20 mean?

QUESTION 9: TAPPING

- Practice tapping the end of a Thunderhex shaft as a part of the build project.
- Paste picture of tapped shaft below.

QUESTION 10: LOCTITE

- ❑ What is Loctite? What is it used for?
- ❑ Make a Loctite color usage chart

QUESTION 11: RIVETING

- Practice riveting a gusset onto a tube as a part of build project.
- Practice drilling out the rivets if any mistakes are made.
- Paste image of gusseted tube below.

QUESTION 12: MISCELLANEOUS FASTENERS

- What is a shaft collar? How do they work? Draw an image of a shaft collar with labels showing how it works.