

Catalyst Volunteer Role and Profile

Please note: The volunteer role and responsibilities may be modified based on the discretion of classroom teacher.

PLTW AUTOMATION & ROBOTICS

SUMMARY: In this final project, the class participates in a scenario in which they have been hired to design, program, and assemble a simulated factory assembly line to produce a stabilizer for a production line of toy blocks. The best design will be used to construct a full-sized automated assembly line.

Students will document their design process in engineering notebooks and are responsible for documenting their process in order to work with another "shift" or class asynchronously. Everyone on the team will take part in all phases of the design process, and rotate through roles of mechanical engineer, electrical engineer, and computer engineer. Each team member is expected to complete a journal entry that documents personal progress, designs, and ideas in their Factory Cell Project notebook every day.

Areas of Focus: Automation, Fabrication, Robotics, VEX components, Documentation in Engineering, Mechanical Engineering

VOLUNTEERS NEEDED:

Since students take on roles of 3 types of engineers, we're interested in finding professionals with varied skills including mechanical engineers, electrical engineers, and computer engineers, particularly with skills in documentation and robotics (especially with sensors and motors and ROBOTC programming language, VEX). Industry professionals with experience in robot sensing and control systems will be able to share relevant, real-world experiences with students to help their projects come alive!

VISIT 1 - Volunteers will:

- Introduce themselves and share a relevant story about their career pathway/experience.
- Share examples of drawings they use regularly in their work (Orthographic and Isometric Drawings).
- Support students to successfully build their testbed and support students who are stuck (without just giving them the answers or fixing challenges for them).
- Share visuals/examples of their work that emphasizes the role they play on a team.
- Support small groups to participate in their first group work and remind students of troubleshooting strategies.

VISIT 2 - Volunteers will:

- Review new sketch ideas and provide feedback on quality of work in alignment with the criteria provided.
- Share examples of strategies for troubleshooting or collaboration used in their careers with examples of when they've worked with team members on a single product (sharing the cell).
- Show examples and describe features of manufacturing systems they have worked with, including images of any physical equipment and drawings etc. they use in real life for documentations.
- Review and provide feedback on the documentation in the Engineering Notebook for each group, summarize the feedback at end of class and when students are collaborating effectively or documenting their problem solving effectively.
- Prompt students/groups who are stuck and encourage them to use classroom resources and peers to support.

VISIT 3 - Volunteers will:

- Encourage full team participation, help troubleshoot problems, and review notebooks.
- Debrief /support and scaffold reflection and documentation process for students accomplishments, problems, and goals for next sessions as they work to complete their projects more independently.
- Review new sketch ideas and provide feedback on quality of work in their notebooks.