

Aerospace Rover Systems Engineering Build Guide

Course Build Guide Project Brief

Engineering Scenario

This guide supports the POE team concept creation process and the capstone-style rover systems build. It helps teams move from individual ideas to an integrated, testable system.

Design Goal

Use a systems engineering workflow to define the mission, combine individual concepts, assign subsystems, plan fabrication, collect test evidence, and prepare the final design review.

Criteria	<ul style="list-style-type: none"> • Every student contributes one individual concept before the team combines ideas. • The team concept identifies subsystems, interfaces, energy flow, control logic, and expected failure points. • The prototype plan includes a build sequence, test sequence, data needs, and safety expectations. • The final review connects design choices to evidence.
Constraints	<ul style="list-style-type: none"> • Do not simply vote for one student concept; combine useful features from multiple ideas. • Use only approved tools, materials, VEX/robotics parts, and classroom test zones. • Subsystem integration must be documented before full-system testing.
Required Evidence	<ul style="list-style-type: none"> • Individual concept sketches • Team combined concept sketch • Subsystem architecture diagram • Build plan and BOM • Test plan and data table • Revision log • Final design review slides or speaking notes
Checkpoints	<ul style="list-style-type: none"> • Individual idea generation • Team concept combination • Subsystem and interface planning • Prototype build sprint • Testing and revision • Final design defense

Final Design Review Expectations

Your final review should clearly connect the problem, evidence, prototype decisions, testing results, limitations, and next recommended improvement. Strong teams show how data changed the design rather than only describing what they built.

Student Deliverable Reminder

Keep all sketches, calculations, data tables, photos, revision notes, and decisions in your engineering notebook or assigned project packet. The notebook should make your design process visible.