Autonomous Rover Mission + Ground Support System

Unit 3 Project Brief

Engineering Scenario

Autonomous rover missions rely on control logic, sensors, feedback, actuators, and support systems to complete a repeatable task safely.

Design Goal

Program or plan an autonomous rover mission and connect it to a VEX, fluid-power, or physical ground-support system.

Criteria	• Mission includes clear start, route/task, and end conditions. • Team explains open-loop and/or closed-loop control behavior. • Ground-support system connects meaningfully to the rover mission. • Testing evidence shows reliability, debugging, and iteration.
Constraints	• Use approved VEX/robotics equipment and classroom test zones. • Follow battery, reset, and traffic-flow expectations during testing. • No team may test without a safe mission path and observer role.
Required Evidence	• Mission flowchart or pseudocode • Input/output table or sensor/actuator diagram • Prototype or code evidence • Test log with revisions • Final mission review with performance data
Checkpoints	• Plan the mission logic • Map sensors, inputs, and outputs • Build or code the rover task • Test and debug one variable at a time • Demonstrate and defend the system

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.