



Learning Outcomes:

- I will demonstrate my engineering skills to build and program a LEGO Mindstorm EV3 tricycle.

Warm-Up Assignment:

- Gear Ratios

Review of Prior Knowledge:

- Gear Ratios

Introduction to New Material: (I Do)

- Overview of Parts

Independent Practice: (You Do)

- Build a LEGO Tricycle

Standards/Expectations:

c7B: demonstrate knowledge of motors, gears, gear ratios, and gear trains used in the robotic systems;

c8B: describe the relationship between torque and gear ratio to weight of payload in a robotic arm operation; and

c8C: demonstrate knowledge of linkages and gearing in end effectors used in a robotic arm system.

c9B: demonstrate an understanding and apply the concepts of torque, gear ratio, stability, and weight of payload in a robotic or automated system arm operation; and

c9C: demonstrate an understanding and apply the concepts of linkages and gearing in end effectors and their use in a robotic or an automated arm system.

c7D: describe the operation of direct current (DC) motors, including control, speed, and torque; and

c7E: describe the operation of servo motors, including control, angle, and torque.

c7F: apply the operation of direct current (DC) motors, including control, speed, and torque;

c7G: apply the operation of servo motors, including control, angle, and torque;

c8: The student creates a program to control a robotic or automated system. The student is expected to:

c8B: use programming best practices for commenting and documentation;

c8C: describe how and why logic is used to control the flow of the program;

c8D: create a program flowchart and write the pseudocode for a program to perform an operation;