

Course Name: Gateway to Technology I (7th grade, 12-weeks)

Unit 1 - Measuring

Essential Questions (from learning targets)	Content Area	Skills / Learning Priority	Standards	Common Assessments
How do I use a ruler? What can I use a ruler for?	Construction	<ul style="list-style-type: none">• Apply measurement systems in the planning and layout processes.<ul style="list-style-type: none">○ Demonstrate use of the Standard Measuring System to the 1/16" and the metric measuring system to millimeters.	Standard: AC1: Students will be able to select and use architecture and construction technologies.	

Unit Vocabulary

- Metric Measuring System, Standard Measuring System, numerator, denominator, fraction

Resources

Instructor, Classroom Materials, Measuring Study Guide, Rulers

Unit 2 - Safety

Essential Questions (from learning targets)	Content Area	Skills / Learning Priority	Standards	Common Assessments
How do I safely and correctly use the equipment?	Construction	<ul style="list-style-type: none"> Demonstrate the safe and appropriate use of hand tools common to the residential and commercial construction industry. Demonstrate the safe and appropriate use of portable power tools that are common to the residential construction industry and are appropriate to the individual student's level. 	Standard: AC1: Students will be able to select and use architecture and construction technologies.	
Unit Vocabulary <ul style="list-style-type: none"> Eye protection, ventilation, machine guards, electrocution, hand tools, power tools, compressed air 				

Resources Skyward, Instructor, Classroom Materials, Safety Study Guide

Unit 3 - Name Cut Out

Essential Questions (from learning targets)	Content Area	Skills / Learning Priority	Standards	Common Assessments
What is the design process?	Broad Based Engineering	<ul style="list-style-type: none"> Use appropriate tools to measure and layout a piece of material (e.g., length, width, thickness, angles, circles, arcs and volume) within tolerances. Design is a creative planning process that leads to useful products and systems. There is no perfect design. 	Standard: BB1: Students will analyze the core concepts of technology. Standard: ENG1: Students will analyze and demonstrate the	

			attributes of design.	
Unit Vocabulary <ul style="list-style-type: none"> Relief cuts, pressure foot, tensioner 				

Resources Instructor, Classroom Materials, Scroll Saw

Unit 4 - Mouse Trap Car

Essential Questions (from learning targets)	Content Area	Skills / Learning Priority	Standards	Common Assessments
How is mechanical advantage used? What is a gear ratio? How does design affect performance?	Power/Energy	<ul style="list-style-type: none"> Examine how power systems are used to drive and provide propulsion to other technological products and systems. Analyze how power is the rate at which energy is converted from one form to another or transferred from one place to another or the rate at which work is done. 	Standard: PE1: Students will be able to select and use energy and power technologies.	
Unit Vocabulary <ul style="list-style-type: none"> Gear ratio, mechanical advantage, fulcrum, lever, potential and kinetic energy 				

Resources Instructor,

Unit 5 - Hydraulic Arm

Essential Questions (from learning targets)	Content Area	Skills / Learning Priority	Standards	Common Assessments
<p>How can we grab, lift, and rotate an object using an arm?</p> <p>What design of hydraulics is most efficient to complete a task?</p>	Engineering	<ul style="list-style-type: none"> Expressing ideas to others, verbally and through sketches and models, is an important part of the design process. Modeling, testing, evaluating and modifying are used to transform ideas into practical solutions. 	Standard: ENG2: Students will analyze and demonstrate engineering design.	
Unit Vocabulary <ul style="list-style-type: none"> Torque, hydraulics, pressure, tension, compression 				

Resources Instructor, youtube video

Unit 6 - Drones

Essential Questions (from learning targets)	Content Area	Skills / Learning Priority	Standards	Common Assessments
How do I meet requirements to get a drone from point A to point B?	Transportation Programming Communication	<ul style="list-style-type: none"> Relate how the current and future design of advanced transportation systems depends on innovation. Analyze how the use of symbols, measurements and drawings promotes clear communication by providing a common language to express ideas. 	Standard: TR1: Students will be able to select and use transportation technologies. Standard: ICT1: Students will analyze, select and use information and communication technologies.	

Unit Vocabulary <ul style="list-style-type: none"> Drone, programming 				

Resources Instructor, Parrot Drone website

Unit 7 - Mechanical Systems

Essential Questions (from learning targets)	Content Area	Skills / Learning Priority	Standards	Common Assessments
How do I use different mechanisms to achieve a goal?	Engineering	<ul style="list-style-type: none"> Technologies systems include input, processes, output, and at times, feedback. Systems thinking involves considering how every part relates to others. Design is a creative planning process that leads to useful products and systems. Requirements for design are made up of criteria and constraints. 	Standard: ENG3: Students will demonstrate and analyze the role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.	
Unit Vocabulary <ul style="list-style-type: none"> Gear ratio, mechanisms 				

Resources

PLTW, Instructor, VEX, Classroom Materials

Unit 8 - Robotics

Essential Questions (from learning targets)	Content Area	Skills / Learning Priority	Standards	Common Assessments
How do I program robotC? What are common pitfalls of improper coding?	Broad Based Manufacturing	<ul style="list-style-type: none">• Build, test and troubleshoot simple linear, rotary and compound mechanisms.• Define mechanical concepts such as force, work, power, torque, velocity, mechanical advantage and gear ratio.• Use tools, materials and machines safely to diagnose, adjust and repair systems.	Standard: BB1: Students will analyze the core concepts of technology. Standard: MNF1: Students will be able to select and use manufacturing technologies.	
Unit Vocabulary <ul style="list-style-type: none">• Limit switch, line follower, bump switch, potent, PsuedoCode, light sensor				

Resources

RobotC, VEX build kits, Instructor, Classroom Materials

Unit 9 - Rube Goldberg

Essential Questions (from learning targets)	Content Area	Skills / Learning Priority	Standards	Common Assessments
How can energy be transferred from one form to another?	Broad Based Engineering Manufacturing	<ul style="list-style-type: none">• Explain the relationship between the inputs and outputs of linear, rotary and compound motion mechanisms in terms of direction, distance and force.• Explain some technological problems are best solved through experimentation.• Comprehend and engage in communication methods to convey ideas, concepts and requirements to other individuals and teams.	Standard: BB1: Students will analyze the core concepts of technology. Standard: ENG3: Students will demonstrate and analyze the role of troubleshooting, research and development, invention and innovation and experimentation in problem solving. Standard: MNF1: Students will be able to select and use manufacturing technologies.	

Unit Vocabulary

- Power transfer, energy transfer, mechanisms, communication, simple machines

Resources

Instructor, Classroom Materials

