STEM camp®

Summer 2023

A Parent's Guide to Activities

What will your children be doing this summer at STEM Camp?

…and why?

…and how?

…and why do we do it that way?

Introducing...

THE STEM CAMP PHILOSOPHY

STEM Camp believes…

- In the power of curiosity and wonder
- That children need to explore the world around them
- That curious children become confident, creative adults, who can think critically and help change the world

STEM Camp provides learning experiences through fun, engaging programming that encourages children to explore their sense of wonder. Children are introduced to hands-on, engaging STEM activities that promote discovery, reward curiosity, and leave children amazed at what they can do.

STEM Camp encourages children's curiosity and sense of wonder, inspiring them to explore and learn about the world around them.

The STEM Camp Learning Philosophy is based upon Inquiry-Based learning which is an educational philosophy designed to trigger a student's natural curiosity. More than just having children ask questions, inquiry-based learning is based on triggering children's inquiry to help them learn something "new". STEM Camp takes this philosophy one step further through its approach to make inquiry-based learning fun so campers are excited about what they find out!

At STEM Camp…

- There is something new and cool to discover every day.
- Activities and projects are based on things you know and love (robots, space, non-newtonian fluids, etc.)
- You can participate independently, in pairs or in a small group. Make a mess, clean up, make a bigger mess and have fun!
- You will work on fun projects and make new friends.

Why do we do it this way?

It is important for children to develop critical thinking and problem solving skills early in life. At STEM Camp, we provide campers with basic tools, ideas and STEM based concepts. From there, campers are encouraged to use their imagination and problem solving skills to complete activities. There are many ways to solve a problem. Campers are encouraged to modify their designs and discuss their observations.

WHAT DOES A WEEK AT STEM CAMP LOOK LIKE?

TIME	MONDAY TO FRIDAY	
8:00am – 9:00am	Before Care – purchased at time of enrollment (STEM Games)	
8:55am – 9:00am	Camper Drop Off	
9:00am – 10:00am	Microbit Activity	
10:00am – 10:20am	Snack	☀
10:20am – 12:00pm	Hands on Activity	☀
12:00pm – 1:00pm	Lunch + STEM Games	☀
1:00pm – 2:00pm	Minecraft Activity	☀
2:00pm – 2:15pm	Snack	
2:15pm – 4:00pm	Hands on Activity	☀
4:00pm – 4:15pm	Camper Pick Up	
4:00pm – 5:00pm	After Care – purchased at time of enrollment (STEM Games)	☀

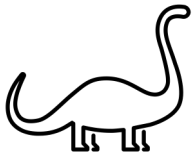
* ☀ Weather dependent but can be an outdoor activity if weather permits.

This year's STEM Camp themes include Jurassic Park, DOUBLE the Minecraft and Harry Potter!

Feel free to use this guide to explore some examples of our hands on and coding & robotics activities we have designed for different age groups.

Enjoy your sneak peek of a few of the fun STEM activities we have planned for our 2023 camp season!

DISCOVER... JURASSIC WORLD



Campers, welcome to Jurassic Park! In these dino-sized summer camp weeks, campers will explore STEM through the eyes of a T-rex, search for fossils in prehistoric Minecraft worlds, and rebuild after those pesky velociraptors got out of their cage. After coding their own guest pass for park entry, campers begin their STEM adventure to build and protect Jurassic Park in the real and virtual worlds through coding, science experiments and so much more. The challenge before you is great; but one thing we know for sure is just like life – campers always find a way.

FOSSIL EXCAVATION

Activity: Hands on

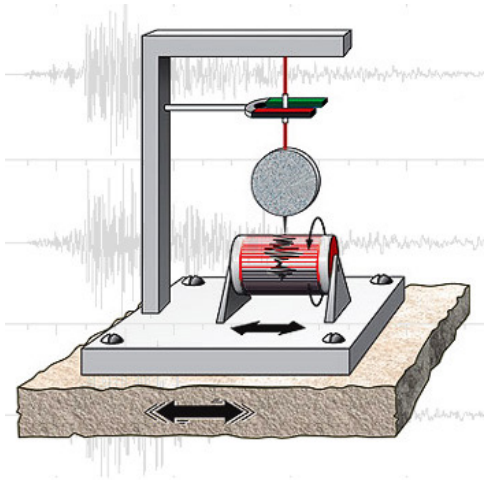
Age group: Grades 3-5 & 6-8

- **Activity:** Learn about paleontology and archeological scientific methods by excavating dinosaur figurines from a plaster mixture made by campers.
- **Why are we doing this activity?** To introduce campers to the science of how fossils are formed, preserved and excavated.
- **How are we doing this activity?** Campers will use ratios and measurements to create their own plaster mixture and hide a dinosaur figurine within their mixture. Once their plaster is dry, they'll use tools like spoons, wooden stirrers and toothbrushes to excavate their own dinosaur!

SESIMIC SHAKES

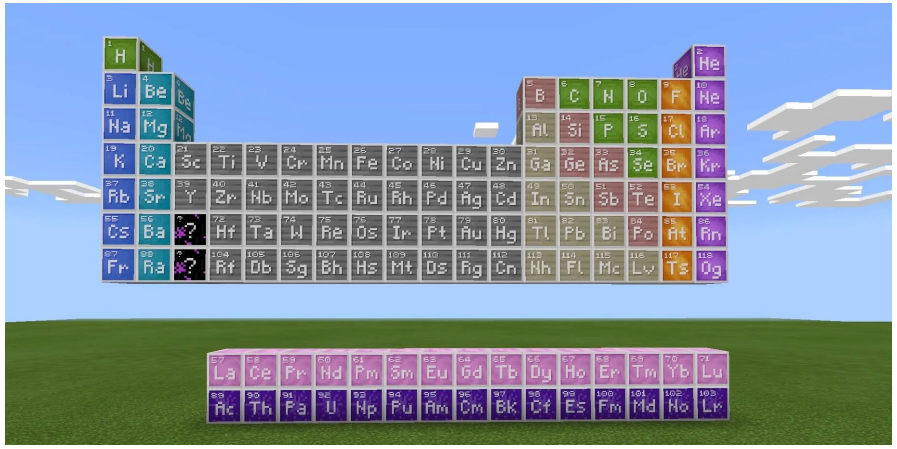
Activity: Hands on

Age group: Grades 6-8



- **Activity:** Create your own seismograph. How does it work and how does it detect movement?
- **Why are we doing this activity?** To explore the scientific instrument that helps scientists identify and categorize earthquakes, investigate motion and inertia and decipher data as well as recognize trends and/or patterns.
- **How are we doing this activity?** Campers will build their own seismograph and create movement to see how their creation measures and tracks movement.

JURASSIC CHEMISTRY LAB



Activity: Coding & Robotics - Minecraft

Age group: Grades 3-5 and 6-8

- **Activity:** Campers will create their own periodic table by breaking down materials in Minecraft and finding different chemical elements!
- **Why are we doing this activity?** To teach campers about the elements on the periodic table and the chemical breakdown of natural resources.
- **How are we doing this activity?** Campers will collect different materials and place them in a Minecraft material reducer to see what elements make up certain material.

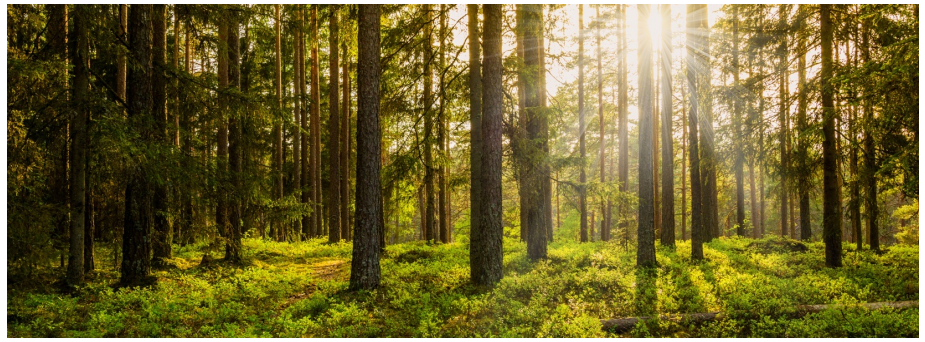
HATCHING DINO EGGS

Activity: Hands on

Age group: Grades SK-2

- **Activity:** Campers will observe a chemical reaction by pouring vinegar on the Dino egg they designed and created to reveal a dinosaur within!
- **Why are we doing this activity?** To learn about chemical reactions and the importance of using ratios and measurements.
- **How are we doing this activity?** Campers will use baking ingredients to build their own dinosaur eggs that will contain a dinosaur toy within them.

JURASSIC ECOSYSTEM

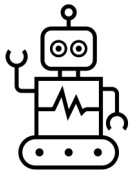


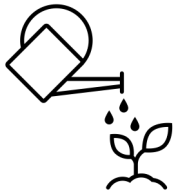
Activity: Coding & Robotics – Microbit

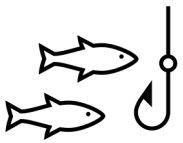
Age group: Grades 3-5 & 6-8

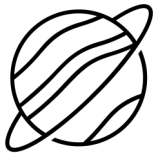
- **Activity:** Campers will work independently to create a series of code for an automated seed planter. In groups, campers will work together to build their seed planting robot.
- **Why are we doing this activity?** To help campers understand the functions of the Microbit, the effects of deforestation, how the MakeCode program works, and further develop their team building and communication skills to create their unique robot!
- **How are we doing this activity?** Using simple materials to design, create and build their automated seed planter, campers will program their Microbit and assemble their robots to drive and plant seeds.

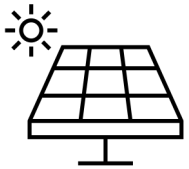
DISCOVER... MINECRAFT EXPLORERS









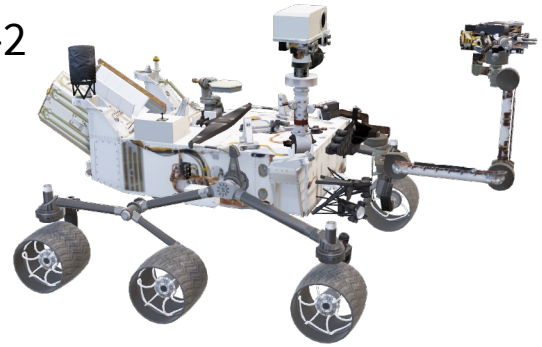


Build a cow-a-pult, save the sea turtles, and help Steve by concocting new and crazy gadgets to aid him in his quest. It's all in a day's work during our Minecraft Explorers weeks! We'll bring Minecraft to the real world with exciting hands-on activities and learn how to code with robots and (you betcha!) Minecraft in the virtual world. Campers will construct a roller coaster to transport supplies throughout their realm while exploring the boundaries of physics, and so much more! Join Steve in this fun-filled week exploring the world of Minecraft – and STEM!

SOW, GROW AND HARVEST

Activity: Coding and Robotics - Minecraft

Age group: Grades SK-2



- **Activity:** Campers will build a garden in Minecraft to feed themselves, their pets and/or livestock such as chickens or sheep.
- **Why are we doing this activity?** To expand campers' knowledge about irrigation, planting, harvesting , agriculture and farming practices.
- **How are we doing this activity?** Campers will design their gardens and bring them to life in Minecraft by collecting necessary materials and tools needed for farming.

STEVE'S GARDEN

Activity: Coding and Robotics - Microbit

Age group: Grades 3-5 & 6-8

- **Activity:** In groups campers will create an automated water pump and sensor system to help save Steve's garden!
- **Why are we doing this activity?** To expand campers' knowledge of the MakeCode program and learn about new efficient farming techniques being used all over the world.
- **How are we doing this activity?** Campers will use the microbit and MakeCode program to create a code and using camp supplies, build their own automated water pump and sensor that will monitor soil moisture levels.

MAGNETIC FISHING

Activity: Hands on

Age group: Grades SK-2

- **Activity:** Using items found at their camp location, campers will explore the world of magnets!
- **Why are we doing this activity?** This activity will introduce campers to the everyday uses of magnets and the properties of magnetism.
- **How are we doing this activity?** Campers will make their own fishing rod with a magnet on the end to see what materials it can and cannot pick up.

SOLAR SYSTEM

Activity: Hands on

Age group: Grades 3-5

- **Activity:** Campers will dive into the world of astronomy by creating their own mini solar system!
- **Why are we doing this activity?** To expand campers' knowledge about planets and the different gases and materials the solar system is composed of.
- **How are we doing this activity?** Campers will use multiple colours of modeling clay to create the different layers of a planet.

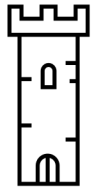
BUILD A SOLAR-POWER HOUSE

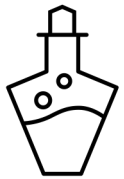
Activity: Hands on

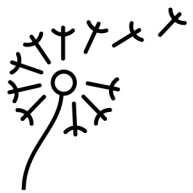
Age group: Grades 3-5 & 6-8

- **Activity:** Campers will design and build a house that uses solar power to keep the lights on all night.
- **Why are we doing this activity?** To encourage campers to learn about solar panels and how they work. Campers will learn about contributing factors, like the behaviour of light, the function of a circuit and how electricity flows.
- **How are we doing this activity?** In groups, campers will use a mini solar cell to design and build their own solar powered house.

DISCOVER... HARRY POTTER







Witches and wizards…leave the Muggles behind and join us on this magical STEM adventure! After being sorted into their houses, campers will get straight to work in potions class, before crafting and decoding secret messages, and using mystical tools (you know, microbit robots!) to design and create a security system to protect Hogwarts. They'll be busy in the most magical of Minecraft worlds, even using their skills to travel through time. Get ready for the magic, mystery and mischief (managed) of STEM with these enchanting weeks!

ASTRONOMY TOWERS

Activity: Hands on

Age group: Grades 6-8

- **Activity:** Campers will design and create an Astronomy Tower featuring a telescope that will be attached on top.
- **Why are we doing this activity?** To investigate the stability and function of structures while adopting the use of the engineering process in groups to design and construct a project.
- **How are we doing this activity?** Campers will use materials provided to build their tower and mirrored sheets and tiles to construct a microscope.

HERBOLOGY CLASS

Activity: Coding and Robotics - Minecraft

Age group: Grades 3-5

- **Activity:** Campers will cast a spell to make flowers appear out of thin air!
- **Why are we doing this activity?** To encourage campers to become familiar with Code Builder and MakeCode blocks while using the coding concept of sequencing to complete tasks.
- **How are we doing this activity?** Campers will use the Minecraft Education program to build a code that allows flowers to bloom as they walk around in their Minecraft world.

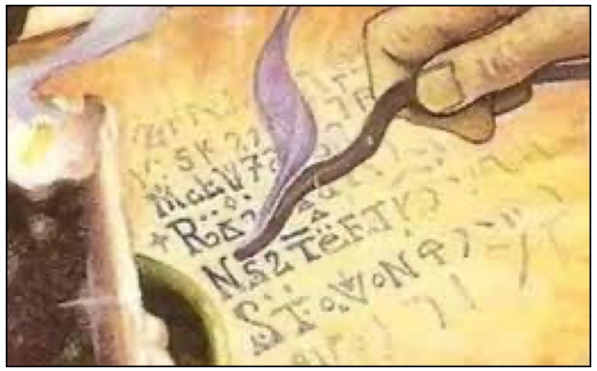
MAGICAL BOTTLE BALLOON

Activity: Hands on

Age group: Grades SK-2

- **Activity:** Learn about the process of chemical reactions by using their own magical skills and casting the inflating charm just like Harry Potter did!
- **Why are we doing this activity?** To engage campers in science and learn more about chemical reactions using the scientific method.
- **How are we doing this activity?** Campers will combine sodium bicarbonate and acetic acid and place the mixture in a balloon to create gas.

MAGIC INVISBLE INK



Activity: Hands on

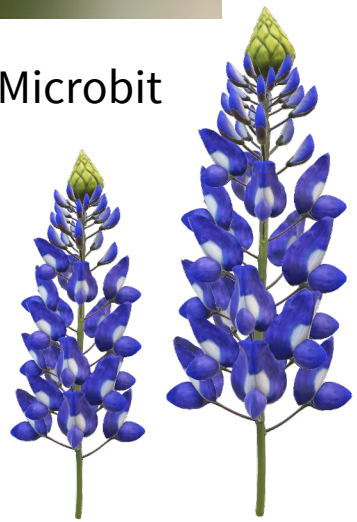
Age group: Grades 3-5

- **Activity:** Learn about the magic of chemistry by creating secret invisible messages for your friends!
- **Why are we doing this activity?** To expand campers' knowledge of acid-based chemical reactions and learn about the importance of mixing solutions and the ratios of materials.
- **How are we doing this activity?** Campers will experiment mixing different ratios of acids and bases to create a perfect formula for their invisible ink!

PLANTS AND POLLINATORS

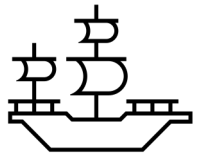
Activity: Coding and Robotics - Microbit

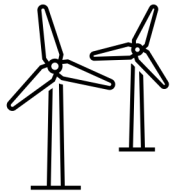
Age group: Grades 3-5 & 6-8

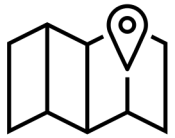


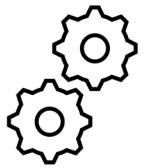
- **Activity:** In groups, campers will be using the MakeCode program to create an automatic pollinator touch sensor that will record each time a bee lands in their garden and visits their flowers.
- **Why are we doing this activity?** To expand campers' knowledge on the different species of plants and pollinators while gaining an understanding of the importance of pollinators and the impact they have on our lives.
- **How are we doing this activity?** Campers will gather data to learn how often pollinators are visiting their flowers by using a code operated touch sensor of their own design.

DISCOVER... MINECRAFT BUILDERS









Get out your crafting table and snap on your tool belt – we have some building to do! On land and sea, in reality and on screen, campers will build new structures and realms, while building their own knowledge of coding, robotics and more! But campers, the road will not be an easy one. We'll prepare for a zombie invasion and create a water block catapult to extinguish our foes and ensure we protect our builds. Those activities and many more await our dreamers, designers and builders in these exciting Minecraft-themed weeks!

WHAT FLOATS YOUR GOAT

Activity: Hands on

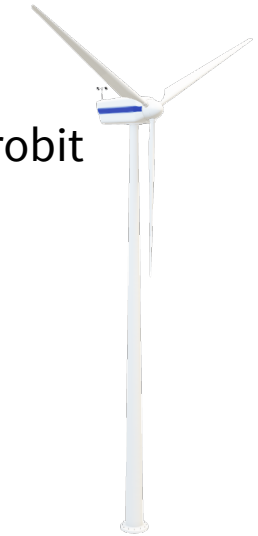
Age group: Grades SK-2 & 3-5

- **Activity:** In this challenge campers will learn about the engineering process by building a boat that can travel across vast distances of water.
- **Why are we doing this activity?** To expand campers' knowledge on buoyancy and to test different types of low-density materials.
- **How are we doing this activity?** Campers will design a boat to hold as much weight as possible, testing and redesigning their creations to meet their individual success criteria.

WIND ENERGY VILLAGE

Activity: Coding and Robotics - Microbit

Age group: Grades 3-5 & 6-8

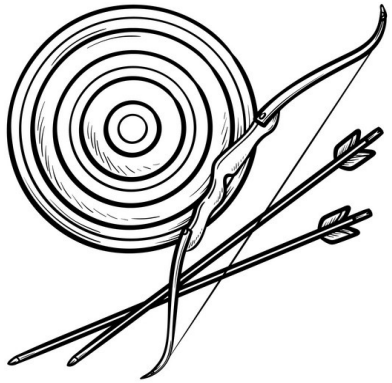


- **Activity:** Learn about computational thinking by using coding and a touch sensor to count the rotations of their own wind turbine!
- **Why are we doing this activity?** To engage campers in the world of energy, what it is? Where does it come from? What are the different types of energy resources? Campers will expand their knowledge on wind energy, wind turbines, and wind farms.
- **How are we doing this activity?** In groups, campers will spend a few days learning about the microbit and different kinds of energy before creating their very own wind turbine.

FIRE AWAY!

Activity: Coding and Robotics - Minecraft

Age group: Grades SK-2



- **Activity:** Campers will apply their creativity by crafting their own bow and arrow in Minecraft. Campers will practice their aiming skills before creating their own small bow and arrow to try in real life!
- **Why are we doing this activity?** To encourage campers to work as a team and take on a new challenges while they attempt to create a game of their own!
- **How are we doing this activity?** Campers will complete both an online and hands-on component for this activity. Campers will apply the knowledge they've learned from Minecraft Education to real life.

MAP YOUR WORLD

Activity: Coding and Robotics - Minecraft

Age group: Grades 3-5 & 6-8

- **Activity:** Learn about the science and art of cartography in Minecraft by mapping and exploring your world.
- **Why are we doing this activity?** This activity will expand campers' knowledge of how to use maps while they learn about different mapping functions in Minecraft and develop a better understanding of basic coordinates.
- **How are we doing this activity?** Campers will use cartography tables and information from cartographer villagers to build maps of their Minecraft world and receive maps about secret locations for them to explore.

RUBE GOLDGERB MEETS REDSTONE

Activity: Hands on

Age group: Grades 3-5

- **Activity:** Campers will use simple mechanisms to create a chain reaction to accomplish a simple task. Mechanisms consist of levers, pulleys, wheels and axles, screws, wedges, and gears.
- **Why are we doing this activity?** To encourage campers to learn about Rube Goldberg machines and how to create complex chain reactions with simple in-game items. Campers will learn about systems, and how individual items can create a working machine that completes a simple task.
- **How are we doing this activity?** Campers will brainstorm the type of chain reaction they'd like to create before building their machine both in Minecraft and in a hands-on activity.