



STEM LEGO Camp Camp In A Box Timeline



S.P.A.M.'s Camp In A Box is a flexible curriculum designed to assist teams in their outreach program and serve as an effective fundraiser. Camp In A Box is completely adjustable to your team's needs and resources, and we hope that you can make the most of this program. If you have any questions, comments, or concerns please contact us at frcteam180@gmail.com or use our website: www.spamrobotics.com

There are two types of camps you can run: a LEGO camp or a LEGO Mindstorms camp. A LEGO camp is ideal if you have low resources, a younger camper demographic, and less experience working with LEGO Mindstorms. The other camp is ideal if you have access to LEGO Mindstorms kits, an older camper demographic, and experience working with Mindstorms. Both types of camps will provide your campers with a fun and educational experience. Simply choose the one that best suits you and your resources.

Getting Started:

This is a brief timeline of how to plan your LEGO Camp with your team:

- Go to our website: www.spamrobotics.com and download all the forms for running your camp.
- Form a planning committee with your team.
- Meet with your committee and decide on dates for your camp.
- Start researching a **location** that has tables and chairs, bathrooms, and electricity, usually schools, churches, libraries, or community centers are all good locations.
- **For Type 2 LEGO Mindstorms Camp:** If possible, try and find a location that will give you access to computers. If you cannot find one with access, you will need to locate or borrow 1 laptop for every 5 campers.
- Start contacting locations and state the following to find the best place for your camp:
"Hello, my name is _____ and I am with the Robotics Team _____. We are looking for a facility to host our LEGO Camp. We are expecting around 25 campers for a half-day camp. Is your facility available on the date _____?"
You might have to try various locations until you get one that will work for your camp.
- Some facilities need **insurance**. You can usually get insurance through your school if your team is affiliated with one. You can also get Specialty Liability Insurance through Nationwide and other insurance companies. The cost is usually around \$200.



STEM LEGO Camp Camp In A Box Timeline



- Start collecting **donations** of LEGO products. Make copies of the Donation Flyer and take it to doctors and dentist offices, libraries, and schools. You will need about 1 pound of LEGO pieces per camper.
- **For Type 2 LEGO Mindstorms camp:** now would be a good time to secure your LEGO Mindstorms kits. You will need 1 kit per every 5 kids. If you are looking into using camps as a long-term fundraiser, buying the kits would be a viable investment. If you can't afford to purchase any kits, try contacting local FIRST LEGO League teams or FIRST Robotics Competition teams and ask if they would loan some.
- **For Type 2 LEGO Mindstorms camp:** you will need a wooden Dohyo (Sumo Board) for the robots to compete on. Building specifications can be found on <http://robogames.net/rules/all-sumo.php>
- Copy the Registration Forms and distribute to places such as schools, libraries, doctors, and dental offices. A great idea for free or inexpensive advertising is through a publication like Macaroni Kid, Hulafrog, or in the newspaper's summer camps section.
- Keep track of all filled Registration Forms and send out a confirmation email when the Registration Forms are received. When your camp gets full, you can either make another camp or explain to the late campers that space is limited.

Camp In A Box PREP Timeline

2 Months Before	45 Days Before	30 Days Before	15 Days Before
Gather a Committee	Insurance	Delegate Out Jobs	Make Copies for Activities
Decide on a Date	Advertise	Send out Registration Forms	Collect Forms/Send Emails
Call Locations	Settle on Location	Tour Location	Collect Activity Materials
Advertise for Donations	Collect Donations	Collect Donations	Collect Donations

Camp In A Box PREP Timeline

10 Days	7 Days	3 Days	1 Day
Put Together Activities	Copy Medical Forms	Purchase Snacks	Registration Forms



STEM LEGO Camp Camp In A Box Timeline



Collect Forms/Send Emails	Copy Liability Forms	Juice Containers	Medical Forms
Collect Donations	<i>FIRST</i> Friends Meeting	Collect Donations	Insurance Forms
Schedule People/Jobs	Consent/Release	Print Schedule	Liability Forms

Type 1 LEGO Camp Timeline

Day 1 of Camp	Day 2 of Camp	Day 3 of Camp	Day 4 of Camp	Day 5 of Camp
Greet Campers	Greet Campers	Greet Campers	Greet Campers	Greet Campers
Check Medical	Name Tags	Name Tags	Name Tags	Name Tags
Check Liability	Activities (Ice-breaker)	Activities (Ice-breaker)	Activities (Ice-breaker)	Activities (Ice-breaker)
Consent/Release	Activities	Activities	Activities	Activities
Collect Money	Teachable Moments Busy Activity STEM Activity	Teachable Moments Busy Activity STEM Activity	Teachable Moments Busy Activity STEM Activity	Teachable Moments Busy Activity STEM Activity
Make Name Tags	Snack	Snack	Snack	Snack
Activities	Teachable Moments UL Activity Contest Tally Scores High Five Line	Teachable Moments UL Activity Contest Tally Scores High Five Line	Teachable Moments UL Activity Contest Tally Scores High Five Line	Teachable Moments UL Activity Contest Tally Scores
Ice-breaker Teachable Moments Busy Activity STEM Activity	Greet Parents	Greet Parents	Greet Parents	Greet Parents



STEM LEGO Camp Camp In A Box Timeline



Snack	Collect Name tags for Name tag Ball	Collect Name tags for Name tag Ball	Collect Name tags for Name tag Ball	Closing Ceremony (High Five Line)
Teachable Moments UL Activity Contest Tally Scores High Five Line	X	X	X	Clean up
Greet Parents	X	X	X	X
Collect Name tags for Name tag Ball	X	X	X	X

Type 2 LEGO Mindstorm Camp Timeline

Day 1 of Camp	Day 2 of Camp	Day 3 of Camp	Day 4 of Camp	Day 5 of Camp
Greet Campers	Greet Campers	Greet Campers	Greet Campers	Greet Campers
Check Medical	Name Tags	Name Tags	Name Tags	Name Tags
Check Liability	Activities (Ice-breaker)	Activities (Ice-breaker)	Activities (Ice-breaker)	Activities (Ice-breaker)
Consent/Release	Activities	Activities	Activities	Activities
Collect Money	Teachable Moments Mindstorm Activity STEM Activity	Teachable Moments Mindstorm Activity STEM Activity	Teachable Moments Mindstorm Activity STEM Activity	Teachable Moments Mindstorm Activity STEM Activity
Make Name Tags	Snack	Snack	Snack	Snack
Activities	Teachable Moments	Teachable Moments	Teachable Moments	Sumo Tournament



STEM LEGO Camp

Camp In A Box Timeline



	Contest Tally Scores High Five Line	UL Activity Tally Scores High Five Line	Contest Tally Scores High Five Line	(Parents invited)
Ice-breaker Teachable Moments Mindstorm Activity STEM Activity	Greet Parents	Greet Parents	Greet Parents	Closing Ceremony (High Five Line)
Snack	Collect Name tags for Name tag Ball	Collect Name tags for Name tag Ball	Collect Name tags for Name tag Ball	Thank parents
Teachable Moments UL Activity Tally Scores High Five Line	X	X	X	Collect Name tags for Name tag Ball
Greet Parents	X	X	X	Clean up
Collect Name tags for Name tag Ball	X	X	X	X



STEM LEGO Camp

Camp In A Box Timeline



Activities

The activities that are listed in the Camp In a Box are all proven STEM Activities that will introduce your campers to Science, Technology, Engineering, and Mathematics in fun and entertaining ways! Each Half-Day Camp is divided into different sections:

Ice-breaker Activity

Busy Activity

STEM Activity

Teachable Moments

Contest

Mindstorms Activity

Sumo Tournament

UL Activity

Tally Scores

High Five Line

Closing Ceremony

Ice-Breaker LEGO Activities

These activities help the campers feel more comfortable to talk to their FIRST Friends and other campers, along with encouraging teamwork and communication skills. Most of these activities require the campers to have access to a large amount of LEGO pieces, we recommend having a bin or pile of LEGO pieces that the students can easily access.

- **Establishing Teams**
 - Separate the campers into teams of 3 to 5 and assign a FIRST Friend to each team. Work with the campers to come up with a team name, and give each team a scorecard to hang on the wall. Refer to the groups by their team name and reward good behavior with points on their scorecard. The team with the most points at the end of the day wins a treat, such as candy or special privileges.
- **Brick Hunt**
 - While waiting for everyone to arrive, challenge the campers to find all the yellow LEGO pieces in your pile or bin. Those LEGO pieces will go to your FIRST Friends to make small LEGO trophies to be used in a later activity.
- **Tower Power**
 - Have each team and their FIRST Friend grab two handfuls of LEGO pieces and challenge the build the tallest freestanding tower in under 2 minutes. The winning team receives points on their scorecard.



STEM LEGO Camp

Camp In A Box Timeline



- **Creature Creation**
 - Ask each team to make their favorite animals, like a dog or a fish, from Lego. Let the campers take turns showing off their creations.
- **Lego Hunt**
 - Tell teams to find all the LEGO bricks, plates, gears, beams, connectors, etc. The team that collects the most wins points for their scorecard.
- **Bridge Builder**
 - Have teams build a LEGO bridge to suspend between two objects, then test with weights. Reward points to the team with the strongest bridge.
- **Copy Cat**
 - Have half of the teams make a pattern using LEGO and have the other half copy it. Switch roles every round, the fastest teams receives points.
- **Terrific Trees**
 - Challenge teams to make a LEGO tree that stands on its own. Encourage creativity, both in designs and colors. Reward teams for having interesting, well built, or innovative structures.
- **Symmetry Science**
 - Introduce symmetry to the campers, have them build something symmetrical. Let campers take turns to show off their structures.

Busy Activities

These activities keep the campers involved and occupied.

- Have a team's FIRST Friend build a small object out of LEGO. The rest of the team works together to build an identical structure. Feel free to make this more challenging by adding restrictions such as "you can only build using one hand" or "you can only make one trip to gather LEGO pieces".
- Give each team a set of index cards and will build the tallest freestanding tower within 5 minutes. Award the team with the tallest tower with points on their scorecard.
- Can you dance like a robot? Do FIRST dances.
<http://www.chiefdelphi.com/forums/showthread.php?postid=1140219>
- Play Simon Says <http://www.wikihow.com/Play-Simon-Says>
- Partners in Pen



STEM LEGO Camp

Camp In A Box Timeline



- Players work in pairs, sat back to back, one player drawing, the other instructing them what to draw.
- Give the people instructing a bag filled with odd objects.
- The instructor now takes an object from the bag and describes it. They're not allowed to name the object or what it's used for.
- If the partner draws it correctly, they score a point.
- The pair to finish their bag first wins.

- **Balloon Volleyball**
 - Unlike regular volleyball, using a balloon means you can play indoors without risk to furniture (or people).
 - You can also play by sitting on the floor. String up a net (with rope or a long bedsheet), and divide into two equal teams.
 - Start the game by instructing the first team with the balloon to hit it across the net to the next team, the other team then hits it back.
 - If a team fails to hit the balloon, or the balloon hits the floor, the opposite team scores a point.
 - Set a time limit for each round.

STEM Activities

Activities that use Science, Technology, Engineering, and Mathematics

- **The Gear Noise Maker**

<http://www.marshall.edu/lego/lessonplans/YellowGears/NoiseMaker.html>

<http://biblebeltbalabusta.com/2012/02/29/lego-gragger-a-diy-version/>

- **LEGO Balloon Car**

<http://www.homegrownlearners.com/home/2013/6/5/lego-education-simple-machines-and-a-lego-balloon-car.html>

- **LEGO rubber band car**

http://frugalfun4boys.com/2014/07/21/two-ways-build-rubber-band-powered-lego-car/#_a5y_p=2096275

- **LEGO Skittles Game**

<http://littlebinsforlittlehands.com/homemade-lego-skittles-game/>



STEM LEGO Camp Camp In A Box Timeline



- **Bridges**

<http://frugalfun4boys.com/2013/02/14/lego-fun-friday-bridge-building-challenge/>

- **Chair For Bear**

Emphasize how beams and connectors make for flexible chairs.

<http://www.legoengineering.com/chair-for-mr-bear/>

- **LEGO Zipline**

Can have the campers build their own ideas of the Zipline Minifig Carrier.

<http://littlebinsforlittlehands.com/lego-zip-line-homemade-toy-zip-line-kids/>

- **LEGO Catapult**

<http://kidsactivitiesblog.com/5971/lego-catapult>

Teachable Moments

Times where you can go into details about FIRST, LEGO, or STEM.

- **LEGO Identification Paper**

Everyone on your team find a Beam, Plate, Brick, Gear, etc

<http://web.cecs.pdx.edu/~sheard/course/Design&Society/winter/Docs/legopartsreference.pdf>

- **FIRST Video**

<http://www.bing.com/videos/search?q=frc%20robotics%202015%20champion&qs=n&form=QBVR&pg=frc%20robotics%202015%20champion&sc=0-21&sp=-1&sk=#view=detail&mid=E9A8C0294EBCB38F6B49E9A8C0294EBCB38F6B49>

- **Introduction of FIRST, Jr.FLL, FLL, FTC, and FRC**

Watch Video of each group <http://www.firstinspires.org>

- **FIRST Friend: Talk about FIRST and experiences**

<https://www.youtube.com/watch?v=IWTjod1y4gl>

- **Jeopardy**

<https://jeopardylabs.com/browse/> You can also make a jeopardy game!



STEM LEGO Camp Camp In A Box Timeline



- **Bridges**

Watch video on how suspension bridges withstand heavy weights

<http://science.howstuffworks.com/engineering/civil/bridge6.htm>

- **Modular Bridges**

<https://www.youtube.com/watch?v=TTJK7-jBKbl>

- **Demonstration:**

Show off your Robot(s)

Contest

Where the teams can earn points throughout the day

- **Can you identify the most famous robots game?**

<https://docs.google.com/presentation/d/1SKopzE0ya5sQCVfnjWbZ2e7PGqe4pRy3ts4KF27Lx0Y/edit>

- **Paper Airplane**

<http://www.kidspot.com.au/kids-activities-and-games/Craft-activities+1/How-to-make-a-sleek-traditional-paper-plane+12120.htm>

<http://www.amazingpaperairplanes.com/Simple.html>

- **Tower**

Which team can build the tallest freestanding tower using legos? Taking it a step farther

<http://www.chiefdelphi.com/forums/showthread.php?postid=1140219>

- **LEGO Race**

<http://www.littlefamilyfun.com/2014/03/lego-spoon-race.html>

- **LEGO Brain Puzzles**

<http://frugalfun4boys.com/2015/08/30/lego-brain-puzzles/>

- **MiniFig Coloring Page**

<http://www.homegrownlearners.com/home/2013/1/21/create-your-own-lego-minifigures-printables-for-boys-girls.html>

- **LEGO Bingo**

<http://www.bigdandme.com/2011/05/lego-bingo/>



STEM LEGO Camp

Camp In A Box Timeline



Mindstorms Activity (only used in Type 2 Camp)

During the course of the camp, the teams will work together to build a LEGO Mindstorms Sumo bot. The sumo bots, through the usage of light sensors and/or ultrasonic sensors will attempt to push each other off the Dohyo, also called the Sumo Board. Building specifications and LEGO Sumo rules can be found at

<http://robogames.net/rules/all-sumo.php>

Day 1:

- Introduce students to parts of Mindstorms kits (exe. the brain, the motors, the sensors, etc.).
- Have teams start building their robot's chassis. Emphasise the importance of a sturdy and robust frame. If the students are uncertain of what to build, videos of sumo bots (easily found on youtube) can serve as inspiration. If the students don't know how to build a chassis, instructions can be found online for multiple types of robots.

Day 2:

- Finish robot chassis and add the motors, wheels, and sensors to the bots. Ask teams to consider which type of wheels would be best for the sumo competition (ie. which type of wheel would have the most traction). In addition, make sure that the sensors are being properly utilized, such as the light sensor being the appropriate length from the ground. Team can also start on additional attachments or mechanisms (exe. ramps, arms, etc.)

Day 3:

- Finish all building and start on programming with the mindstorms software. Have teams program their bots to stop, reverse, and turn around whenever the robot senses a white line. This will take some effort however, multiple resources on how to create a sumo program can be found online as well as other types of programming resources.

Day 4:

- Have students test and debug their programs. At this point they can start testing their robots against each other to identify and fix a major weakness in their build, programming or strategy.

Day 5

- Teams prepare for the Sumo Tournament. This is the last day for them to work on their robots, so any more additions or modifications will have to be done then. In addition, names will have to be chosen for their robots.

Remember: if you're having issues with the team's robots that there is tons of helpful resources online!



STEM LEGO Camp Camp In A Box Timeline



Sumo Tournament (only used in Type 2 Camp)

It's time to compete! Use a traditional tournament bracket (winner vs winner), or if you have an odd number of teams, use a round robin system (an easy bracket generator can be found at <https://www.printyourbrackets.com/round-robin-generator.php>). Rules for the actual tournament can be found at <http://robogames.net/rules/all-sumo.php>

UL Activity

Register Online using UL Paperwork in the Camp In A Box.

This award-winning series teaches kids ages 4-8 how to make everyday decisions that are Safety Smart®. Starring the beloved characters Timon and Pumbaa from Disney's *The Lion King*, these 8 videos and accompanying materials will help children avoid injuries, live problem-free, and stay Safety Smart®! This program is translated into 35 languages: English, Arabic, Bulgarian, Cantonese, Czech, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hindi, Hungarian, Italian, Japanese, Kannada, Korean, Mandarin (PRC), Mandarin (Taiwan), Marathi, Norwegian, Polish, Portuguese (Brazil), Portuguese (Portugal), Romanian, Russian, Spanish (Castilian), Spanish (Latin American), Swedish, Tamil, Telugu, Turkish, Ukrainian, and Vietnamese.

Wild About Safety with Timon & Pumbaa: Safety Smart® Healthy & Fit!

Key Safety Concepts: exercise, healthy eating, hand washing

Wild About Safety with Timon & Pumbaa: Safety Smart® Online!

Key Safety Concepts: cyber safety, Internet searches, information permanence

Wild About Safety with Timon & Pumbaa: Safety Smart® On The Go!

Key Safety Concepts: slow down, pay attention, use proper safety equipment, don't distract

Wild About Safety with Timon & Pumbaa: Safety Smart® In The Water!

Key Safety Concepts: feet first, life jackets, lifeguards

Wild About Safety with Timon & Pumbaa: Safety Smart® Honest & Real!

Key Safety Concepts: honesty, kindness, responsibility

Wild About Safety with Timon & Pumbaa: Safety Smart® Goes Green!

Key Safety Concepts: reduce, reuse, recycle

Wild About Safety with Timon & Pumbaa: Safety Smart® At Home!

Key Safety Concepts: smoke alarms, overloaded electrical outlets, electrical heaters



STEM LEGO Camp Camp In A Box Timeline



Wild About Safety with Timon & Pumbaa: Safety Smart® About Fire!

Key Safety Concepts: fire triangle, smoke alarms, fire escape plans

Closing Ceremony

The closing ceremony is necessary to end on a high note and celebrate the camper's accomplishments. Give a short speech about what the camper's learned and the things that they built. At the end, form a high five line and give them a certificate with their name on it. Be sure to ask the parents beforehand to arrive a early so they can attend.

**Thank you so much for being a leader of STEM and
FIRST in your community. We welcome any
suggestions and comments at
www.spamrobotics.com**