

# Indigenous Youth Robotics Program

Start building now to prepare for

# Robotics Powwow/Tournament May 11, 2019

 **Stantec** Lobby and Innovation Centre

325 25th Street SE, Calgary Alberta



Picture: Robots workshop with Animal Allies challenge kit. From Stampede Foundation Urban Indigenous Youth Program workshop with IndigeSTEAM and FIRST Western Canada. March 2018.

## Indigenous Youth Robotics Powwow and Tournament

IndigeSTEAM, in partnership with FIRST Robotics Society of Western Canada and Stantec, are pleased to bring you an opportunity for Indigenous youth in your community (school, community centre, or where ever!) for 2019.

There will be three ways for youth to participate with their robots:

- Drumming and/or Dancing
- FIRST Lego League (FLL) tournament – modified from the regional competitions
- Design-your-own-robot demonstration

As many Indigenous schools/districts/community centres have not had robotics kits, coaches and/or programs to date, we are ready to help you:

- Recruit youth
- Train coaches and teachers
- Bring in Mentors

You will have to supply the following:

- Space and time for the team(s) to build their robots
- Your own robot kits, if you have them (any kind of robots)
- Help / facilitate their learning
- Provide travel to Calgary for the tournament/powwow<sup>#</sup>

You will be able to apply for:

- Lego Mindstorms kits for your FLL team if you do not have EV3 or NXT kits\*
- FLL challenge mat and kit (For 2019, the challenge is “Into Orbit”. Other challenges available.)\*

Attend the Powwow / Tournament

- Stantec is hosting our robotics powwow/tournament at their Calgary office location, 325 25th Street SE in their lobby and Innovation Centre on Saturday, May 11, 2019. #

# If we exceed the capacity of Stantec’s location, we may be looking for a larger venue, so we don’t have all the details for you quite yet.]

\*Supplies are limited and will be preferentially provided to communities with no robots currently

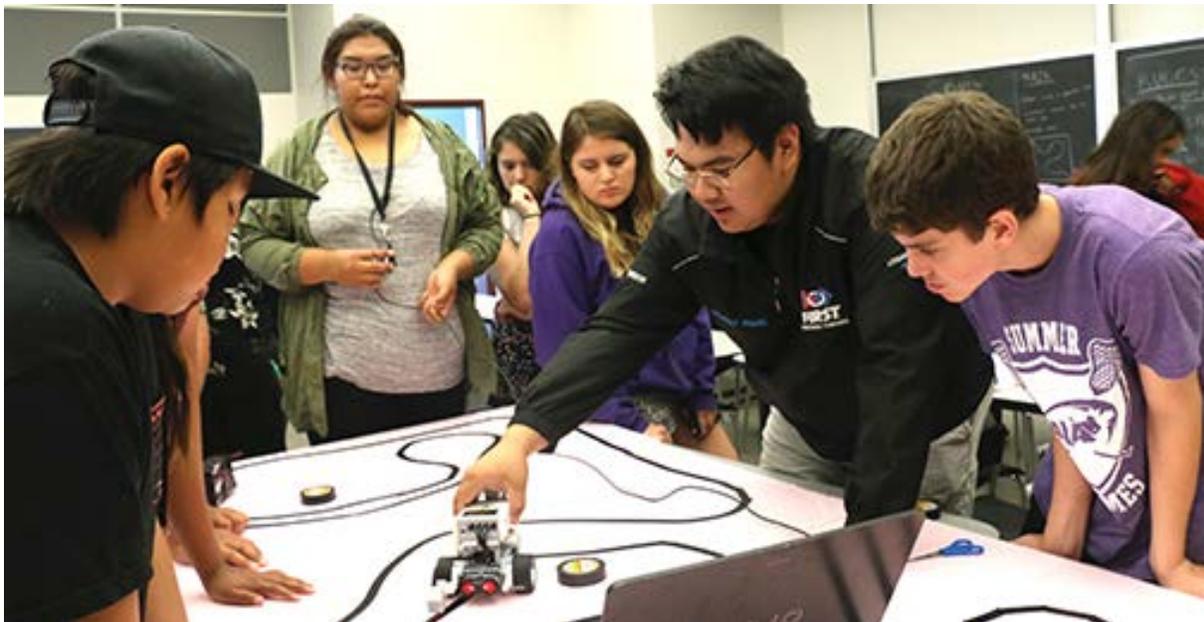
**NOT COST TO REGISTER: to register for the program, visit our website at [indigesteam.ca](http://indigesteam.ca)**

## What does every robotic team need to participate?

- Two or more adult coaches willing and motivated to guide the team through the discovery and competition season (and beyond) – no special technical experience is required, but often one coach is a teacher or community program leader. Parents can also be coaches and mentors. Senior high school youth are also encouraged to join as coaches. IndigeSTEAM is seeking at least 1 adult willing to serve as the reserve/community champion and our main point of contact for information about teams, funding opportunities, other events, and any other aspects of robotics team competition towards long term sustainability of the programs.
- Up to 10 students ages 9 to 16 willing to put in time and do any job the team needs to succeed (lots of important jobs available for all skill levels and interests). In North America, participants must be 9 to 14 years old for regional competition, but for our tournament, older youth who have never had the opportunity to program a robot are invited. Senior high-aged youth are invited to be mentors and coaches along with adults. One community may have more than 1 team.
- A suitable meeting place, either public or private, that can accommodate the team(s) with enough room for dancing robots to make a 2 - 3 metre circle.
- The desire to learn, explore, strategize, build comradery, share ideas and talents, make new friends, be accepted, and HAVE FUN!

## What is the time commitment?

- As a coach or volunteer, you should be meeting with your team approximately once per week during this build and competition season (February - May). You, your family, and your available free time can decide together how much time you can devote to the program. You may want to see about extra time in April. We can help arrange special training workshops for you or your youth team. Most robot programs plan on 12 weeks, some do it all in 3 day weekend builds and others meet all year long for tournaments and competitions.
- As a youth team member, the same applies. Be prepared to meet once per week from February through May, or consider a week long build during spring break week. Like any sport or club, the more time you invest in helping your team will add to your team's success.



Picture: Robot programming session with Indigenous mentor, Logan. Power to Choose Indigenous Youth Summer STEM camp, UCalgary. In partnership with FIRST Western Canada. August, 2017.

## Drumming and/or Dancing Robots

It wouldn't be a powwow without drumming and dancing. But for this powwow, the robots need to be doing the drumming and dancing.

- The same or different robots can be used for drumming and for dancing.
- Any kind of robot can be used.
- Can you build a robot to fancy dance or jingle dance? Or both!
- Bring the drum you designed for drumming. We may not have a drum that works with your robot.
- Dancing robot(s) can be dressed up in traditional outfits.

## Design your own challenge

Any thing goes in this category.

- Can you build a robot or robots who can square dance?
- Can you build Rodeo Barrel racing robots?



Picture: Robots barrel race. From Stampede Foundation Urban Indigenous Youth Program workshop with IndigeSTEAM and FIRST Western Canada. March 2018.

## FIRST Robotics FIRST Lego League – style tournament needs:

- A suitable meeting place, either public or private, that can accommodate a 4 x 8-foot playing field mat (plus room for kids and kits) and has internet access.
- A standard Challenge Set and a common set of rules issued by FIRST and LEGO and/or modifications and additional challenges as follows for this tournament. For 2019, the challenge is "Into Orbit". [More below in the sections pertaining to FLL.]
- At least 1 LegoMindstorms (EDU or home edition) and computer for the team to use and bring to the tournament (laptop, tablet, etc.) [More below.]

## Any special skills required?

The really cool thing about FIRST LEGO League is...all skill levels are welcomed and needed, technical or non-technical. Teams need all kinds of skills and creativity to succeed, so what are you good at? Chances are you have a job for you. And we'll probably teach you a few new ones while you're with the program.

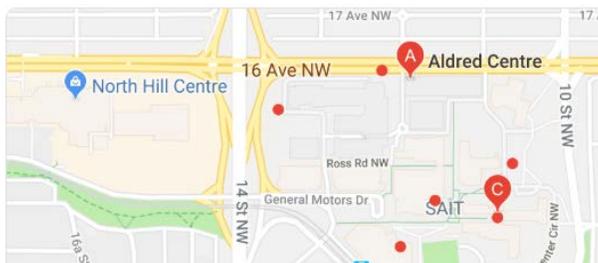
Youth team members are encouraged to bring any skills or interests they already have, but most importantly a desire to learn and solve problems as a team. FIRST LEGO League welcomes every student, with or without special skills. Like our coaches say, "This is the only sport where if you show up, you can play."

(Modified from FIRST LegoLeague Team Basics for Power to Choose Robotics Powwow/Tournament)

## FIRST Robotics Regional Competitions you can attend to see what it is all about!

*Imagine what it would be like if there was a STEM competition that was something like the Stanley cup playoffs!*

See the FIRST Video, "This isn't a robot" - <https://www.youtube.com/watch?v=mtE6Va6oOhU>



**Check out the upcoming FLL regional competitions to see what all the fun is about**

Calgary, March 2, 2019 at SAIT Aldred Centre. 16<sup>th</sup> Ave NW, Calgary. Usually the after lunch time is best to see that robot game challenges. [Information about this event will be here.](#)



Interested in the other levels? FLL Jr will be the same day as FLL. FIRST Tech Challenge (JH/SH) Information about this event is at <http://frcwest.com/events/>

FIRST Robotics Challenge (SH) April 3 to 6, Nelson Mandela High School / Genesis Centre, 7555 Falconridge Blvd NE, Calgary, AB T3J 0C9

Saturday, April 6 provides the best viewing of the whole competition. Teams will be making 3 team alliances during the previous days and Saturday is the play-offs. Come and root for the Kainai High School K-bots Team number 5118, who are also competing in Victoria BC this year. See <https://www.firstinspires.org/team-event-search/team?program=FRC&year=2019&number=5118>

[https://www.youtube.com/watch?v=F\\_Auxy\\_ZdAQ](https://www.youtube.com/watch?v=F_Auxy_ZdAQ) is a youtube video of one team's efforts over multiple years so you can get a sense of the robots and the game play. There are so many Youtube videos you can see that show you the game play at all levels of FIRST Robotics competition.



Picture: Wollongong Public School team "System Roverload" competes at a local competition Wollongong, NSW, Australia.

## Questions and Answers

Register your school/community centre with Power to Choose Robotics at [IndigeSTEAM.ca](http://IndigeSTEAM.ca).

Complete some questions so we best know how to help you. We will be in touch to talk with you about specific details and set up meetings in your location.

Assess what you have and determine what you need.

Would you like us to present to you and your group about all the stuff below in person?	<b>YES!!!</b> We appreciate that a lot of this is new to you and are happy to show it off.	<b>No.</b> We assume you have someone who knows about robotics or FIRST Lego League and can be our contact with your group.
Do you have Lego Mindstorms robot kits	<b>We have some robot kits</b> <b>Yes.</b> Any type of robot will do for some of the tournament action.	<b>We don't have any robot kits</b> Depending on our supplies, we may be able to grant or lend you one core EV3 EDU kit
	<b>Are they Lego Mindstorms?</b> NXT or EV3 editions. EDU kits have more options over home versions.	
Are the MindStorms kits missing some parts?	Whether you lost them a long time ago, or loose them during the season of this challenge, please check with us re: part availability. We may have spare parts to share.	
Do you have a laptop or tablet computer for the team to use to program their robot(s).	<b>Yes.</b> We suggest you use Lego Edu software rather than home editions. <a href="#">EV3 here.</a> <a href="#">NXT here.</a>	<b>No.</b> Depending on our supplies, we may be able to grant or lend you a tablet, chromebook or older laptop computer.
Do you have an Into Orbit challenge kit	<b>Yes.</b> Is it assembled: Do you need help with that? You are all set to go!	<b>No.</b> We have several Into Orbit challenge kits currently and hope to get additional ones as the regional competitions complete.
Do you have a previous year's challenge kit? Examples: Hydrodynamics, Animal Allies, Trash Trek	<b>Yes.</b> You can compete with that one if your team would like. Please let us know if you need parts or instructions.	<b>No.</b> If you would like to tackle a different challenge like Animal Allies from a previous year, we can get you a kit and instructions for that.
Do you have a Lego Mindstorms Expansion kit?	<b>Yes.</b> Then definitely, you are ready to go!	<b>No.</b> While not strictly required, the extra parts in this kit can expand what the robot can do.
Do you have access to funds?	<b>Yes.</b> We will chat with you about what you are looking to support and determine what best you need from us.	<b>No.</b> We will work with you to find sponsors and supporters for the things you need.
Would your team like to show off at a community powwow?	<b>We hope you say YES!!</b> We have ways that you can go to a community powwow and show off your robots and let others have a hand at driving them. We would love nothing better than to have a real life robots powwow at a community powwow!	

## How do we / new coaches train?

The most successful coaches are people with at least an interest in science and technology, and in helping kids discover and learn. But we can't emphasize enough that no special technical skills are required. Anyone who wants to be a coach will receive all the training and help they need.

We will come to your location for at least 1 block of instructional time and show you how the Into Orbit Challenges work, how you can program the Mindstorms robot, how the build instructions work, educational resources and answer any questions you have. We are working on the idea of teleconferences or newsletters to share ideas and information with you. You can always email us at [info@indigesteam.ca](mailto:info@indigesteam.ca) or phone 403-616-4474 and we will find an answer for any question. You can and should practice by building a robot and learning how to program it for some simple things.

## What are the rules for the FLL-style tournament?

- 1 – 3 LegoMindstorms robots / team
- Solve as many missions as possible in 3 minutes
- One robot at a time. The time each robot spends solving a mission does not need to be equal to another robot.
- One robot can do more than one mission in a single turn on the mat. Or one robot can do more than one mission at different times during the 3 minutes. This means that while one robot is solving a mission, other team members can be doing a quick rebuild of the parts a robot may need to solve the next mission.
- Other rules and scoring will follow the rules for FLL competition. See the Into Orbit Challenge guide and all the FIRST FLL resources at <https://www.firstinspires.org/resource-library/fll/into-orbit-challenge-updates-and-resources>
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## How do we coach our teams to build robots for this?

There are so many ways to build a robot, but most teams start with team members putting together the basic or education robot that is in the [manual](#) for the Lego Mindstorms EV3 Edu core kits. [If you have NXT kits, follow that [manual](#).]

EV3 <https://education.lego.com/en-au/support/mindstorms-ev3/building-instructions#robot>

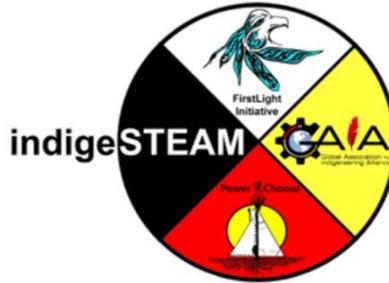
NXT <http://www.nxtprograms.com/9797/express-bot/steps.html>

To try some different shapes, check out Youtube and FLL videos there like [Builderdude35](#) and his channel of videos where you will see some building ideas and learn a lot of different things.



Once team members have base robots, the building and programming starts to solve the missions in this year's Into Orbit challenge. Check out the [resources](#) provided by FIRST Western Canada for links to the mission video, coaches handbook, and so much more. You should review the [challenge guide](#) and mission video at <https://www.youtube.com/watch?v=IY1Z9kK71jQ>

How to handle more than one robot. Here is a link to a video showing the missions solved by different individual robots. Note the names of the builder/programmer on each robot is different. This is how you can work a team for our Powwow/Tournament. [https://www.youtube.com/watch?v=AqD6t1Cx\\_w](https://www.youtube.com/watch?v=AqD6t1Cx_w) We suggest once an individual or pair of team members have solved a mission, that you start working on how you can make it go quicker, speed up the change in parts between putting robots on the field or doing more than one mission at the same time. Builderdude35 will show you some ways to add attachments to the base with dog gears for easy switching. Here is a [team video](#) that may give you and your team an example of how one robot can be made to do more than one challenge at a time, how to build pieces that will help aim a robot, and in general how a competition takes place.



## Who are we?

IndigeSTEAM Society: IndigeSTEAM Society was incorporated in 2018 with the mission of providing Indigenous perspectives in Science, Technology, Engineering and Mathematics (STEM) to support Indigenous youth success and through connections to culture, community and role models. IndigeSTEAM combines the programs of three existing programs: Power to Choose (Indigenous youth programs, founded by Alberta Women's Science Network in 2007 as Operation Minerva for Aboriginal Girls), GAIA (mentors network linking Indigenous people with STEM degrees to strengthen their ability to be youth mentors and support each other), and First Light Initiative (strengthening STEM knowledge in Indigenous communities). The vast majority of IndigeSTEAM board members are Indigenous people with a STEM education.

FIRST Robotics Society of Western Canada is an official FIRST partner organization dedicated to promoting and supporting FIRST programs at all levels throughout Saskatchewan, Alberta and British Columbia. Founded in 2013, the Society relies entirely on the amazing generosity of our forward-thinking sponsors and the countless hours put in by volunteers. Through these, we are able to support organizations all over Western Canada to deliver outstanding, fun and educational programs for students from Kindergarten to Grade 12. The First Robotics Society helps coordinate all aspects of FIRST programming, including connecting students with local teams, finding mentors to help support those teams, providing educational resources to teams, and organizing FIRST top level robotics competitions for FIRST LEGO League Jr. (FLL Jr.), FIRST LEGO League (FLL), FIRST Tech Challenge (FTC) and FIRST Robotics Competition (FRC).

The partnership of IndigeSTEAM and FIRST Western Canada was developed through grants from FIRST Inspires: Diversity and Inclusion for 2016-7 and 2017-8 seasons to support the development of FIRST Robotics teams for Alberta's Indigenous youth. Nations.

Contact us at [info@indigesteam.ca](mailto:info@indigesteam.ca) or visit [indigesteam.ca](http://indigesteam.ca). Talk with us at 403-616-4474 (Wendy).

## 2018-2019 Sponsors

