Smart Kids Robotics
Robotic Engineering. Coding & AI Academy

FIRST LEGO LEAGUE MARKHAM

Happy Learning Education Center & Smart Kids Robotics

ACTION PLAN & FUNDING

FIRST LEGO LEAGUE TRAINING SYLLABUS

Course Overview:

This robotics training program is designed to prepare a team of 9-year-olds for the First LEGO League (FLL) Challenge competition. Over the course of this program, participants will learn essential robotics, engineering, and teamwork skills to design, build, and program a competitive robot using the LEGO Spike Prime platform. The syllabus is structured to cover various aspects of the FLL Challenge, including robot design, programming, project research, and core values.

Instructor Information:

1st Instructor: Andre Champagne
Email: Learn@SmartKidsRobotics.ca
Phone: 647-970-2242

2nd. Instructor: Wendy Chen
Email: wendy.chen.toronto@gmail.com
Phone: 437-340-7747

Administrator: Regina Wang
Email: reginaliang2008@gmail.com
Phone: 647-802-9866

Treasurer: Rayne Tao
Learn@SmartKidsRobotics.ca

Office Hours: Mon-Fri. 10am – 5pm / Sat. 11am to 5pm
Course Duration: 74 to 120 hrs.

- 5 Months (20 Lessons) to get our team FLL Ready.
- Individual Project Commitment Time of 2.5 Hours Per Week above 1.5 Hrs. Class Lesson

Prerequisites:

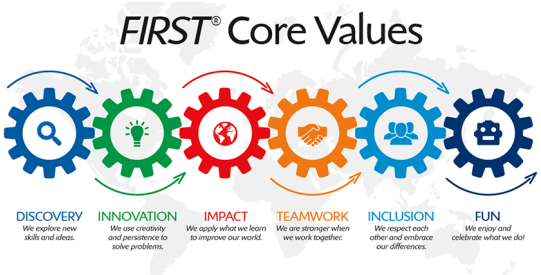
- Enthusiasm and curiosity for robotics and technology.
- Basic understanding of LEGO building.
- No prior robotics experience required.

Learning Objectives:

By the end of this training program, participants should be able to:

- Understand the First LEGO League Challenge competition rules and objectives.
- Design and build a competitive LEGO Spike Prime robot capable of completing mission tasks.
- Program the robot using the LEGO Spike Prime software.
- Conduct research and develop a project related to the annual FLL theme.
- Demonstrate effective teamwork, problem-solving, and communication skills.
- Embrace and exhibit the FLL Core Values throughout the competition.

FIRST LEGO LEAGUE CORE VALUES:



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Course Outline

Session 1: Introduction to FLL and Robot Basics

- Overview of the FLL Challenge.
- Introduction to LEGO Spike Prime.
- Basic robot building principles.
- Overview of the robot game and missions.

Session 2: Robot Building and Prototyping

- Hands-on robot building with LEGO Spike Prime components.
- Prototyping mechanisms for completing missions.
- Understanding robot design considerations.

Session 3: Programming Fundamentals

- Introduction to LEGO Spike Prime programming software.
- Basic programming concepts and blocks.
- Creating simple robot programs.

Session 4: Advanced Robot Programming

- Building more complex programs.
- Sensors and sensor programming.
- Debugging and troubleshooting.

Session 5: Strategy and Game Planning

- Analyzing the robot game field.
- Developing a mission strategy.
- Planning robot runs and testing.

Session 6: Core Values and Teamwork

- Understanding and discussing FLL Core Values.
- Team-building activities.
- Effective communication and collaboration.

Session 7: Project Research and Development

- Introduction to the annual FLL Challenge theme.
- Researching the theme and identifying problems.
- Brainstorming project ideas and solutions.

Session 8: Project Presentation and Documentation

- Creating a project presentation.
- Documenting the research and development process.
- Receiving feedback and making improvements.

Session 9: Final Robot Testing and Competition Preparation

- Fine-tuning the robot and programs.
- Practice runs on the robot game field.
- Preparing for the competition day.

Session 10: Mock Competition and Wrap-Up

Simulating a competition scenario.
Final preparations and strategy adjustments.
Reflecting on the training program and setting goals.

Assessment and Evaluation:

Participants will be assessed through various means, including:

- Robot performance in practice runs.
- Project presentation and documentation.
- Teamwork and collaboration.
- Participation in core values activities.
- Overall engagement and improvement throughout the program.

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High-Level Brief / Timeline

Months Before the Competition:

1. Month 1-2: Team Formation and Orientation

Team Captain:
-Coordinate initial team meetings and establish a collaborative team environment.
-Facilitate team-building activities to foster strong interpersonal connections.

Programmer(s):
-Familiarize themselves with the LEGO Spike Prime programming environment.
-Begin exploring basic programming concepts and the capabilities of the Spike Prime robot.

Builder(s):
-Acquire a foundational understanding of the LEGO Spike Prime kit.
-Engage in early discussions with programmers to align on robot design concepts.

Researcher(s):
-Start exploring potential project themes related to the FLL challenge.
-Research existing solutions and technologies related to the chosen theme.

2. Month 2-3: Grasping the Challenge

All Team Members:
- Attend FLL challenge workshops to understand the rules and requirements.
- Discuss and align on the importance of FLL Core Values in their collaborative efforts.
- Begin brainstorming ideas for both the robot missions and the research project.

Three Months Before the Competition:

1. Month 4: Establishing Team Dynamics

Team Captain:
-Collaborate with team members to establish a set of team rules and norms.
-Foster an inclusive environment that values diverse perspectives and contributions.

All Team Members:
-Begin regular team meetings to discuss progress and address any concerns.
-Commence brainstorming sessions for the research project, encouraging creativity.

2. Month 5: Research Project Kickoff

Researcher(s):
-Present potential project themes to the team for discussion and selection.
-Begin conducting preliminary research on the chosen theme.

All Team Members:
-Participate in open discussions to refine and solidify the research project concept.
-Allocate tasks for in-depth research and initial development of the project.

Two Months Before the Competition:

1. Month 6: Robot Building and Programming Commences

Programmer(s) and Builder(s):
-Collaborate closely to design and build the robot based on mission requirements.
-Begin coding the initial set of missions, emphasizing functionality and reliability.

All Team Members:
-Engage in regular status updates to ensure seamless integration between robot design and programming.

2. Month 7: In-depth Project Development

Researcher(s):

-Compile research findings into a cohesive project narrative.
-Collaborate with other team members to integrate project elements into the final presentation.

All Team Members:
-Conduct mock presentations to receive constructive feedback and refine presentation skills.

One Month Before the Competition:

1. Month 8: Integrating Robot and Project Components

All Team Members:
-Participate in joint sessions to integrate the robot's programming with the research project.
-Conduct trial runs of the complete presentation and robot missions to identify potential issues.

Team Captain:
-Coordinate efforts to ensure smooth collaboration between the different components.
-Month 9: Fine-Tuning and Testing

Programmer(s) and Builder(s):
-Address any identified issues in robot performance through iterative testing.
-Fine-tune the robot's programming to optimize mission completion.

All Team Members:
-Collaboratively refine the project presentation, paying attention to clarity and engagement.
-Finalize all project and robot components, ensuring readiness for the competition.

Weeks Before the Competition:

1. Week 10: Final Preparations and Team Coordination

Team Captain:
-Conduct a comprehensive review of all aspects of the project and robot.
-Facilitate team discussions to address any identified issues or concerns.

All Team Members:
-Participate in team-building activities and motivational sessions.
-Verify the completeness of all competition materials and requirements.

2. Week 11: Dress Rehearsals and Polishing

All Team Members:
-Run full dress rehearsals, focusing on smooth transitions between project and robot components.
-Practice response to potential questions from judges and enhance presentation delivery.

Team Captain:
-Provide motivational support and ensure that each team member is confident and prepared.
-Address any last-minute adjustments or concerns.

Competition Week:

Competition Day: Showcasing Team Excellence

All Team Members:
-Arrive early to set up the project display and the robot.
-Participate enthusiastically in all judging sessions, showcasing individual and team accomplishments.

Team Captain:
-Maintain a positive and encouraging atmosphere throughout the day.
-Ensure that each team member has the opportunity to shine in their respective roles.

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ACTION PLAN

DATE - START	DATE - DUE	ACTION	TASK	Answers	RESPONSIBLE
2023-11-09	2023-11-13	2nd Person Needing to be added as Coach in FLL Dashboard	Wendy, Rayne and Regina were added to the FLL Team Roster.	Yes Board Team: Andre (Engineer / Primary Coach / Team Organizer & Funding Organizer) Wendy (Computer / Industrial Engineer & 2nd. Robotics Coach) Rayne (Accountant & Treasurer of Funds & Budget) Regina (Director / Parent Liaison and Organizer)	Andre / Regina
		Timeline	When will you be able to start your project?	2023-11-13	Team
		Timeline	How often will your team meet?	Board Team: Twice per week (Tuesdays Evening & Friday Evening) Robotics Team: Twice Per week (Monday after school and Saturdays)	Team
		Timeline	Are there any key dates to share for the project? Add additional key dates into the	Nov. 6th. - Partners + Teachers Discussion on FLL Nov 10th. - Initial Kick-Off Meeting Nov. 14th. Parents Package (FLL Mkt. Pkg.), Pricing & Syllabus Nov. 13th. - Parents Package (FLL Mkt. Pkg.), Pricing & Syllabus (Team Approval) Nov. 25th. - Student & Parent Demo Class (Time of Day???) Nov. 30th. - 6 to 8 Students (Paid and Signed-up)	Team Approved
	2023-11-13	Parents Package (FLL Mkt. Pkg., Pricing & Syllabus)	Approval	Approved	Andre with Team Sign-off
		Budget	How we're planning to spend the seed funding & what costs we're anticipating to get our project up and running.	See FUNDING sheet approved by board.	Team
		Impact	How will our community benefit from this project?	- Community showcase in the mall to demonstrate student talents and for kids to present their robotics publicly to improve each child's public speaking skills. This will demonstrate to the community the importance of teaching kids engineering, science and facilitate discussions between our Robotics Club and other businesses within the mall to assist in further community gatherings. - St. Padre Peel School (Vaughn) Friday, Nov. 24th. 6pm-9pm - Be there for 5pm (Table Setup for Winter Market) for a parent demo for FLL. We want to further promote the science of engineering and to get students thinking about careers in engineering. - November 25th. Team Board will assemble a list of paid and free events to promote with our team of students; engineering and the FLL Competition to communicate the importance of engineering, science, mathematics and robotics.	Team
		Impact	What measurable goals do your have for your project, such as the number of people that will participate?	- Survey Parents (Feel, Progress in their child, studies improve, time management). - Our Board will write a Case Study on our students and areas where we found improvements in their lives both personally and academically. We will further submit this to ChangeX and to the FLL Board for their consideration.	Wendy / Andre
		Impact	Are you hoping to spread knowledge or increase interest in a specific subject?	STEM (Engineering, Science, Technology, Math – in this order).	Team Board
		Location	If your project requires physical space, have you decided the location?	Yes - We have space provided by the Happy Learning Education Center.	Andre, Regina
		Location	Do you have all necessary permission and permits to carry out your project at the chosen location?	Yes, we have all necessary permissions and permits to conduct our project.	Andre, Regina

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FUNDING

COMPETITION TYPE	ITEM	DESCRIPTION	COST USD	COST CDN	QTY	SUB-TOTAL CDN
FLL Challenge (9 - 14) (2/team to 10/team)	Team Reg	Team Registration for FIRST LEGO League Challenge for the 2023/2024 season	$250.00	$337.50	1	$337.50
FLL Challenge (9 - 14) (2/team to 10/team)	FIRST® LEGO® League Challenge Class Pack	24 Students Supported 1 Team Meeting Guide (for teacher) 1 Class Pack Guide 24 Student Engineering Notebooks 4 Robot Game Rulebooks 2 Challenge Sets FIRST® Thinkscape access (through September 2024) to digital guidebooks, getting started materials, Class Pack resources	$825.00	$1,113.75	1	$1,113.75
FLL Challenge (9 - 14) (2/team to 10/team)	Lego SPIKE Prime Per Team Member	Lego Spike Prime Core Kit		$563.87	3	$1,691.61
FLL Challenge (9 - 14) (2/team to 10/team)	LEGO Education SPIKE Prime Expansion Set	Lego Spike Prime Expansion Kit		$187.58	3	$562.74
FLL Challenge (9 - 14) (2/team to 10/team)	Extra Mats	Student team will need at least one more Mat to take		$90.00	2	$180.00
FLL Challenge (9 - 14) (2/team to 10/team)	Robotics Table	Robotics Table				Built / Completed
FLL Challenge (9 - 14) (2/team to 10/team)	Laptops	Laptops				Andre Purchased
						$3,885.60
CHANGEX GRANT MONEY						$2800
PERSONAL FUNDING						$1,085.60

ADDITIONAL FUNDING NEEDED:

FLL Challenge (9 - 14) (2/team to 10/team)	TRAVEL	Parents will need to assist in paying for travel expenses				TBD	TBD
FLL Challenge (9 - 14) (2/team to 10/team)	TEAM APPAREL	Parents will need to assist in paying for team apparel expenses				TBD	TBD
FLL Challenge (9 - 14) (2/team to 10/team)	TEAM FUEL / FOOD	Parents, Happy Learning Education Center, Smart Kids Robotics & Personal Funding will be used to provide the students during the 5 months up to (15 Pizza Meals) to ensure the kids are focused and need not need to travel for food outside class hours. We are arranging special pricing with a local Pizza franchise to assist in providing food for the students.					

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Meeting Notes

November 21st. 2023

Target: 16 students
Wendy: 11 yr.. Boy / 9 yr. Girl / 9 ½ Boy (Wendy) /
Andre: 9 yr. (Brendan)
Wendy: Vanessa / Angela / Allen / Will

Saturday, Dec. 2nd. 2023
10am - 11am: Chess
1pm - 2:30pm: Robotics
3:30pm - 5pm: FLL - Demo (Students / Parent)

Deal Discussed:
- 15% off or 1 month free idea - no good.
- Decision: Keep existing deal

Direct Mkt:
- Wendy: Mom's Group in Vaughn
- Regina: Post through WeChat / Parents grp. / Redbook
- Andre: Andre FB Acct. / Regina FB Acct.
- Andre: Will talk with Adam to set up Regina and Wendy for Interview.

ACTIONS:
1. Andre: Edit "FLL Demo Collateral":
   Replace Black Friday with "FLL Special" (Use the Black Friday Deal Flyer)
   Due: Thursday, Nov. 23rd.

2. Andre: Create "3 Printable Flyer of FLL Demo Collateral" for Event & Mall Handouts
   Due: Friday, Nov. 24th.

3. Andre: Update the School Screen to add FLL Challenge Registration with VIDEO!!! Make it FLASHY / Eye Catching.
   Due: Friday, Nov. 24th.

4. Andre: Send "FLL Demo Collateral" to the team.
   Due: Thursday, Nov. 23rd.

5. Andre: Call Adam to see if an interview is possible, then get questions, answer them for Regina and Wendy to translate.
   Due: Nov. 22nd. 2023

6. Wendy & Regina: Review list of Events and identify if any of these events would be good for us to pass out flyers at those events to attract parents into the FLL program. Send suggestions to Grp. Chat in WeChat
   Due: Nov. 22nd.
   https://www.google.com/search?q=markham+events&sca_esv=584452497&sxsrf=AM9HkKn0GOgvU6oVa7SRMEYxs6Oq6jk1Jw:1700613865416&ei=6U5dZZ_7GMD9ptQPkuqNyAk&uact=5&oq=markham+events&gs_lp=Egxnd3Mtd2l6LXNlcnAiDm1hcmtoYW0gZXZlbnRzMggQABiABBixAzIFEAAYgAQyBRAAGIAEMgUQABiABDIFEAAYgAQyBRAAGIAEMgUQABiABDIGEAAYBxgeMgsQABiABBiKBRiRAjIFEAAYgARI3hZQAFjuBnAAeACQAQCYAcICoAHdCaoBBzMuMS4yLjG4AQPIAQD4AQHCAgoQABiABBgNGLEDwgIHEAAYgAQYDeIDBBgAIEGIBgE&sclient=gws-wiz-serp&ibp=htl;events&rciv=evn&sa=X&ved=2ahUKEwj9-ljGsNaCAxXAATQIHZI1A2YQ66QDKAV6BAhbEAs#htichips=date:month&htischips=date:month&htidocid=L2F1dGhvcml0eS9ob3Jpem9uL2NsdXN0ZXJlZF9ldmVudC8yMDIzLTExLTI1fDkyODQzMDY0MzY5MTM1ODU2MTI%3D&htivrt=events&fpstate=tldetail

7. Direct Digital POSTINGS to be sent out by Friday Nov. 24th. Block off time an hour in your calendars to post the Advertisement for "FLL Demo":
   Due: Friday Nov. 24th.
   a. Wendy: Mom's Group in Vaughn
   b. Regina: Post through WeChat / Parents grp. / Redbook
   c. Andre: Andre FB Acct. / Regina FB Acct.

QUESTIONS:

Responsible	Due Date	Description or Question	Answer & Follow-up
Andre	Nov. 24th. (Overdue)	When will funding be provided by ChangeX?	Date will be provided by Nov. 24th. Let the board know. It's Nov. 30th. 2023 and we're still waiting on Tiago to confirm the funding still. I sent a follow-up request to Tiago.
Andre / Tiago	Nov. 21	Where does ChangeX get funding?	Microsoft
Andre / Tiago	Nov. 21	Microsoft, Can we use the MS logo?	No we cannot.
Andre / Tiago	Nov. 21	Receipts, where to submit?	Submit online through the ChangeX page under Impacts.
Board	Nov. 22	Purchases:	All purchases will be approved by our board by unanimous agreement.
Board	Nov. 22	Impact:	Survey will go out to all parents, a separate one will go out to the students and a third will go out to all volunteers.

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Meeting Notes

December 5th. 2023 Agenda:

- Funding Confirmation (Waiting or Confirmed?)
- Students Amount and List
- Who Signed up for the Demo / Trial Class for the weekend
- What will be the start and end date of the class given the team we've assembled?
- If funding approved: Who will take care of getting all quotes for the board to approve?

Note: Waiting on additional Board members to submit additional pending questions to address during the meeting.