

2019-20 **FIRST® LEGO® League**
Downingtown FLL-FMA
FIRST® LEGO® League Qualifier

December 14, 2019 | CCIU TCHS Brandywine Campus | Downingtown, PA



Table of Contents

Table of Contents	1
Welcome	2
Directions	3
About FIRST® LEGO® League	4
About the LEGO Group	4
FLL Schedule	5
FLL Jr. Schedule	6
Important Event Information!	7
More Important Event Information!	8
Food!	9
FLL Jr. Exhibition Teams	10
FLL Teams	11-13
About FIRST®	14
FIRST® Core Values	14
CITY SHAPER SM Challenge	15
The Innovation Project	15
The Robot Game	15
FIRST® LEGO® League Core Awards	16
Judging Schedule	17
Robot Game Schedule	18
Team Schedule	19
Thanks to Our Tournament Sponsors!	20
Thanks to Our Global Program Sponsors	20
Ready for the next step?	21
The Lord's Pantry of Downingtown	22
Autographs	23
Join Us!	24



Join Us!

For the FIRST MidAtlantic FLL Championship to be held at Springside Chestnut Hill Academy on February 1, 2020!

For our youngest spectators



The 2019-2020 BOOMTOWN BUILD Challenge will reach more than 169,000 children, ages 6-10, from more than 50 countries and inspire them to create buildings and spaces to improve quality of life in the fictional city of Boomtown. Through 12 guided sessions in their Engineering Notebooks, teams of up to six children will learn about principles of design and basic STEM concepts from Boomtown residents, May and Marco.



FIRST®, the FIRST® logo, FIRST® Robotics Competition, FIRST® Tech Challenge, Coopertition®, and Gracious Professionalism® are registered trademarks of For Inspiration and Recognition of Science and Technology (FIRST®). LEGO® is a registered trademark of the LEGO Group. FIRST® LEGO® League, FIRST® LEGO® League Jr., and CITY SHAPER are jointly held trademarks of FIRST and the LEGO Group. All other trademarks are the property of their respective owners.

© 2019 FIRST and LEGO Group. All rights reserved.

Welcome!

2019 FMA-FLL

Downingtown Regional Qualifier

We would like to thank *everyone* involved in this event. This includes all the FLL and FLL Jr. Teams that will be participating and their coaches, mentors, and parents who make this opportunity available to the students. We are especially grateful to the volunteers who donate their time and talents to ensure the event runs smoothly.

FIRST® LEGO® League teaches a wide variety of skills such as programming, robot design, robot construction, and FIRST's keynote Core Values. We commend the FLL and FLL Jr. teams, on your commitment, interest, and passion to be involved with this wonderful program and hope you enjoy the event.

In this packet, you will find directions to the CCIU, the schedule for the day, match timings and other essential information.

Downingtown Area Robotics is pleased to host this event. We are very proud of the students from our FRC and FTC programs (including many FLL alumni!), who you will see working hard throughout the day, with their mentors and many other volunteers. At Downingtown Area Robotics, we introduce, expand, and develop our students' confidence, leadership and communication skills, all while exploring STEM subjects and giving students exposure to engineering practices and tools used every day in the "real world." Please visit us in the Exton Mall or at DARobotics.org if you are interested in learning more about us or the programs we offer.

Thank you for supporting the teams at this qualifying tournament. You will be amazed at the engineering, the research, and the energy these teams demonstrate. FIRST® LEGO® League inspires them, and they in turn inspire us. Thank you for celebrating with us!

~Clem McKown, Event Director



Directions

*CCIU Intermediate Unit
(TCHS Brandywine Campus)
443 Boot Road, Downingtown, PA*

Please enter via the traffic light on Boot Road, turn to the right and park in the UPPER parking lot. Enter through the Main Entrance Doors after crossing the white bridge.

Directions from the North:

Follow Route 100 South to Business Route 30 (Lincoln Highway) in Exton

Turn right onto Route 30 West. Continue about 2½ miles to Quarry Road

Turn left onto Quarry Road and continue for about 1 mile to Boot Road

Turn right onto Boot Road and continue for approximately ¾ mile to the traffic light at CCIU Drive (on the right after the CCIU building).

Turn right at the traffic light, then turn to the right and park in the UPPER parking lot.

Directions from the South:

Follow Route 100 North towards Route 30 West/Exton

Take the exit for Route 30 West towards Downingtown/Lancaster and continue approximately 2¾ miles to the exit for Route 30 Business/Lancaster Ave

Exit at Route 30 Business/Lancaster Avenue, turn left onto Lancaster Ave (follow signs for Downingtown/US 30 Business W) and continue less than ½ mile to Quarry Road

Turn left onto Quarry Road and continue for about 1 mile to Boot Road

Turn right onto Boot Road and continue for approximately ¾ mile to the traffic light at CCIU Drive (on the right after the CCIU building).

Turn right at the traffic light, then turn to the right and park in the UPPER parking lot.

About FIRST® LEGO® League



In FIRST® LEGO® League, children are immersed in real-world science and technology challenges. Teams design their own solution to a current scientific question or problem and build autonomous LEGO robots that perform a series of missions. Through their participation, children develop valuable life skills and discover exciting career possibilities while learning that they can make a positive contribution to society.

For more information, visit www.firstinspires.org

About the LEGO Group

The LEGO Group is a privately held, family-owned company with headquarters in Billund, Denmark, and main offices in Enfield, USA, London, UK, Shanghai, China, and Singapore. Founded in 1932 by Ole Kirk Kristiansen, and based on the iconic LEGO® brick, it is one of the world's leading manufacturers of play materials. Guided by the company spirit: "Only the best is good enough", the company is committed to the development of children and aims to inspire and develop the builders of tomorrow through creative play and learning.

For more information, visit www.LEGO.com.

Downingtown
FLL Regional Qualifying Tournament

Schedule

7:00 AM	Doors Open/Volunteer Check-In
7:30 AM	Judges Meeting
8:00 AM	Team Check-In
8:30 AM	Referee Meeting
8:45 AM	Coaches' Meeting
9:00 AM	Opening Ceremonies
9:15 AM	Judging Begins
	Referee Volunteer Review
12:00 PM	Lunch Break
12:30 PM	Robot Matches Begin
3:45 PM	Dancing/Judges Deliberations
4:30 PM	Awards/Closing Ceremony
5:00 PM	Doors Close

Please contact the Event Director, Clem McKown, with questions

484-645-3689 or clemmckown@comcast.net

The Lord's Pantry of Downingtown

No one should suffer from hunger. The Lord's Pantry of Downingtown provides food, information, and basic assistance to those in need with respect and compassion. To assist The Lord's Pantry in its efforts, we ask each team that participates in the FLL Regional Qualifier and the FLL Jr. Exhibition to donate an item from their list of most needed items:

Boxed Goods	Canned Goods	Toiletries
Pasta/Spaghetti (all types)	Veggies (Corn, String Beans, Carrots, Potatoes, Mixed Veggies, Mushrooms, Beets)	Toothpaste and Tooth Brushes
Rice (white/brown or flavored)	Beans (white, red, black, pinto, kidney, chick peas)	Deodorant
Mac & Cheese	Pork & Beans	Shaving Products
Instant Potatoes	Tuna, Ham, Chicken	Razors
Hamburger Helper	Complete Meals (Ravioli, SpaghettiOs, Stew, Manwich, Chili, etc.)	Soap
Stuffing	Tomatoes (Crushed, Whole, Stewed, Diced)	Shampoo
Oatmeal	Tomato Sauce (glass jars or cans)	Feminine Hygiene products
Breakfast Cereal (all types, including children's cereals)	Fruits (Pears, Pineapple, Mandarin Oranges, Peaches, Fruit Cocktail)	Depends
Snack Crackers	Soups (all types)	
Cookies		Other Goods
	Miscellaneous	Peanut Butter (all types)
Baby Products	Reusable Grocery Bags	Jelly (all types)
Diapers	Toilet Paper	Coffee (ground & instant)
Wipes	Paper Towels	Sugar & Flour
Baby Shampoo	Laundry Detergent	Condiments
Formula	Juice (Cranberry, Grape, Apple, Mixed)	Cooking Oil

Items will be collected and dropped off at The Lord's Pantry after the event. Your generosity is greatly appreciated.

[The Lord's Pantry of Downingtown](#) has been in operation for over 50 years and is a non-profit, 501(c)(3) organization which currently serves 700 registered families in the Downingtown area.



Ready for the next step?

For **FIRST® LEGO® League** participants who are “aging out” of the program this season, or for any participants who are simply ready for a new challenge – we hope you will continue your **FIRST®** journey by participating in the **FIRST® Tech Challenge** or the **FIRST® Robotics Competition**!

In **FIRST Tech Challenge** students in grades 7-12 design, build, and program robots, develop strategy, and engage in thrilling, head-to-head competition. Teams get to:

- Model a real-world engineering process and apply math and science concepts
- Develop strategic problem-solving, organizational, and team-building skills
- Build life skills while building robots and work towards participating in tournaments and World Championship.
- Compete and cooperate in alliances and tournaments
- Qualify for scholarships at over 150 colleges/universities

For more information about getting started with **FIRST Tech Challenge**, visit <http://www.firstinspires.org/robotics/ftc> or email firsttechchallenge@firstinspires.org

In **FIRST Robotics Competition** students in grades 9-12 compete with 120-pound robots, combining the excitement of sport with the rigors of science and technology. Teams get to:

- Develop design, project management, programming, teamwork, strategic thinking, and Coopertition® skills
- Work alongside professional engineers
- Build and compete with a robot of their own design
- Learn and use sophisticated software and hardware
- Qualify for scholarships at nearly 200 colleges/universities

For more information about getting started with **FIRST Robotics Competition**, visit <http://www.firstinspires.org/robotics/frc> or email firstroboticscompetition@firstinspires.org or visit us at darobotics.org

Downingtown FLL Jr. Exhibition Schedule

9:00 AM	Doors Open/Volunteer Check-In
9:45 AM	Team Check-In
10:15 AM	Opening Ceremony
10:30 AM – 12:00 PM	Judging
	Teams can get food and observe the FLL event when they are not in a judging session
12:00 PM – 12:45 PM	Judges deliberation (teams can enjoy the concessions and observe the FLL event)
1:00 PM	Awards/Closing Ceremony
	FLL Jr. Teams are welcomed and encouraged to stay for the FLL Robot Game!

Please contact the Event Director, Clem McKown, with questions

484-645-3689 or clemmckown@comcast.net


Important Event Information

Questions & Help


If you have questions about anything or need assistance, please see anyone wearing a Downingtown Area Robotics t-shirt. They will direct you to someone who can assist you. If you urgently need to contact someone in charge of the event, please go to the registration desk.



Live Stream!



FRC1640 has scheduled a live stream



2019 Downingtown Area Robotics FLL RQT and FLL Jr Exhibition
FRC1640 • Scheduled for 12/14/19, 12:30 PM

SET REMINDER

This year, DAR will host a live stream of the Qualifying Tournament. You can access it here: [YouTube LiveStream](https://youtu.be/ebTvDdCWnNY)

If that does not work, please copy and paste this link into your browser: <https://youtu.be/ebTvDdCWnNY>

Arrivals

It is critical that all teams try to arrive on time (no later than 8am) and immediately come to the registration desk.

Thanks to Our Tournament Sponsors!



Thanks to Our Global Program Sponsors!



Downingtown Regional Qualifying Tournament

Team Schedule



Team	RD	P	CV	Robot	Robot	Robot
2446	9:15 RD-1	11:00 P-1	11:30 CV-1	1:18 T2	2:26 T1	3:38 T4
2484	9:30 RD-1	11:15 P-1	11:45 CV-1	1:10 T4	2:18 T3	3:30 T6
2485	9:45 RD-1	11:30 P-1	9:15 CV-1	1:02 T6	2:10 T5	3:22 T2
4548	10:00 RD-1	11:45 P-1	9:30 CV-1	12:54 T2	2:02 T1	3:14 T4
4764	10:15 RD-1	9:15 P-1	9:45 CV-1	12:46 T4	1:54 T3	3:06 T6
6309	10:45 RD-1	9:30 P-1	10:15 CV-1	12:30 T2	1:46 T5	2:58 T2
10210	11:00 RD-1	9:45 P-1	10:30 CV-1	12:38 T6	1:38 T1	2:50 T4
14491	11:15 RD-1	10:00 P-1	10:45 CV-1	12:34 T3	2:42 T6	3:42 T5
16088	11:30 RD-1	10:15 P-1	11:00 CV-1	12:42 T1	2:26 T2	3:34 T1
17423	11:45 RD-1	10:30 P-1	11:15 CV-1	1:06 T1	2:18 T4	3:26 T3
17424	9:15 RD-2	11:00 P-2	11:30 CV-2	12:50 T5	2:10 T6	3:18 T5
17820	9:30 RD-2	11:15 P-2	11:45 CV-2	12:58 T3	2:02 T2	3:10 T1
17821	9:45 RD-2	11:30 P-2	9:15 CV-2	1:14 T5	1:54 T4	3:02 T3
23352	10:00 RD-2	11:45 P-2	9:30 CV-2	1:22 T3	1:46 T6	2:54 T5
25496	10:15 RD-2	9:15 P-2	9:45 CV-2	1:34 T6	2:42 T5	3:42 T6
28772	10:45 RD-2	9:30 P-2	10:15 CV-2	1:22 T4	2:38 T3	3:34 T2
29479	11:00 RD-2	9:45 P-2	10:30 CV-2	1:14 T6	2:22 T5	3:26 T4
34328	11:15 RD-2	10:00 P-2	10:45 CV-2	1:06 T2	2:14 T1	3:18 T6
36374	11:30 RD-2	10:15 P-2	11:00 CV-2	12:34 T4	2:06 T3	3:10 T2
36375	11:45 RD-2	10:30 P-2	11:15 CV-2	12:50 T6	1:58 T5	3:02 T4
38403	9:15 RD-3	11:00 P-3	11:30 CV-3	12:42 T2	1:50 T1	2:46 T2
39715	9:30 RD-3	11:15 P-3	11:45 CV-3	12:58 T4	1:42 T3	2:54 T6
41049	9:45 RD-3	11:30 P-3	9:15 CV-3	1:34 T5	2:38 T4	3:38 T3
41697	10:00 RD-3	11:45 P-3	9:30 CV-3	1:18 T1	2:22 T6	3:30 T5
42120	10:15 RD-3	9:15 P-3	9:45 CV-3	1:10 T3	2:14 T2	3:22 T1
42199	10:45 RD-3	9:30 P-3	10:15 CV-3	1:02 T5	2:06 T4	3:14 T3
45010	11:00 RD-3	9:45 P-3	10:30 CV-3	12:54 T1	1:58 T6	3:06 T5
45050	11:15 RD-3	10:00 P-3	10:45 CV-3	12:46 T3	1:50 T2	2:58 T1
45102	11:30 RD-3	10:15 P-3	11:00 CV-3	12:30 T1	1:42 T4	2:50 T3
48111	11:45 RD-3	10:30 P-3	11:15 CV-3	12:38 T5	1:38 T2	2:46 T1

Wait, There's Even More Important Event Information

Gracious Professionalism

Fun is the rule for the day. Please act in accordance with the Core Values of *FIRST*® LEGO® League. Respect your referees, coaches, and mentors. Always be kind to your fellow teams and team members, and help out as needed.

Inspections

Robot inspections will be performed at the competition tables. Be sure your robot is made of only LEGO pieces.



Practice Table

There will be a practice table for teams to use. It will be available at any point throughout the competition. Please limit your team's time at the practice table to 5 minutes to allow other teams to have a turn at the table.

****IMPORTANT**** Please bring all field pieces not attached to the competition table. You will need these for the Practice Table.



Food

Concession Stand

The concession stand will be available all day in the cafeteria, and we encourage teams to take advantage of this. Pre-order forms have been emailed to teams to facilitate your lunch orders. They can be handed in at the registration desk with payment. Cash and checks (payable to "Downingtown Area Robotics") will be accepted.

Breakfast Menu

Donuts	50¢
Baked Goods	50¢
Bagels/Cream Cheese	\$1

Lunch/All Day Menu

Water/Soda/Juice	\$1
Coffee/Tea/Hot Chocolate	\$1
Gatorade	\$2
Candy	\$1
Chips	50¢
Water/Soda/Juice	\$1
Pizza (whole pie)	\$15
Hot Dog	\$2
Meatball Sandwich	\$3.50
Samosa	\$1.50
Spring Roll	\$1.50

Outside Food

No outside food is permitted in the competition venues. Host teams and venues are not compensated by FMA for hosting events. The sale of concession food is a fundraiser for the host teams; all proceeds benefit the 2019-2020 Downingtown Area Robotics programs. Please respect this by not bringing outside food to our venues; this includes tailgating, catered meals, meals prepared at home, etc. We understand that a small number of students have specific dietary requirements that would require those students to bring in outside food and request that teams please consult with the Event Coordinator about these cases. We appreciate your support!

Robot Matches

	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
12:30	45102	6309				
12:34			14491	36374		
12:38					48111	10210
12:42	16088	38403				
12:46			45050	4764		
12:50					17424	36375
12:54	45010	4548				
12:58			17820	39715		
1:02					42199	2485
1:06	17423	34328				
1:10			42120	2484		
1:14					17821	29479
1:18	41697	2446				
1:22			23352	28772		
1:26	BREAK					
1:30	BREAK					
1:34					41049	25496
1:38	10210	48111				
1:42			39715	45102		
1:46					6309	23352
1:50	38403	45050				
1:54			4764	17821		
1:58					36375	45010
2:02	4548	17820				
2:06			36374	42199		
2:10					2485	17424
2:14	34328	42120				
2:18			2484	17423		
2:22					29479	41697
2:26	2446	16088				
2:30	BREAK					
2:34	BREAK					
2:38			28772	41049		
2:42					25496	14491
2:46	48111	38403				
2:50			45102	10210		
2:54					23352	39715
2:58	45050	6309				
3:02			17821	36375		
3:06					45010	4764
3:10	17820	36374				
3:14			42199	4548		
3:18					17424	34328
3:22	42120	2485				
3:26			17423	29479		
3:30					41697	2484
3:34	16088	28772				
3:38			41049	2446		
3:42					14491	25496





Judging Schedule

	RD-1	P-1	CV-1	RD-2	P-2	CV-2	RD-3	P-3	CV-3
9:15	2446	4764	2485	17424	25496	17821	38403	42120	41049
9:30	2484	6309	4548	17820	28772	23352	39715	42199	41697
9:45	2485	10210	4764	17821	29479	25496	41049	45010	42120
10:00	4548	14491	Break	23352	34328	Break	41697	45050	Break
10:15	4764	16088	6309	25496	36374	28772	42120	45102	42199
10:30	Break	17423	10210	Break	36375	29479	Break	48111	45010
10:45	6309	Break	14491	28772	Break	34328	42199	Break	45050
11:00	10210	2446	16088	29479	17424	36374	45010	38403	45102
11:15	14491	2484	17423	34328	17820	36375	45050	39715	48111
11:30	16088	2485	2446	36374	17821	17424	45102	41049	38403
11:45	17423	4548	2484	36375	23352	17820	48111	41697	39715
12:00									

FLL Jr. Teams Exhibiting

Team #	Team Name	Organization	Location
7744	Masterminds	The Grayson School	Wayne
14665	Epic Cat-A-Tects	Sarah Starkweather Elementary School	West Chester
16138	Cr8r Bots	Pickering Valley Elementary School	Chester Springs
16152	Crash Astronauts	Pocopson Elementary School	West Chester
16179	Robotic Titans	Downingtown Area Robotics	Exton
16312	Viking Robots	Downingtown Area Robotics	Exton
19263	Pickle Chickens	Swarthmore Rutledge School	Swarthmore
19269	The Hillendale SuperBuilders	Hillendale Elementary School	Chadds Ford
20143	Pocopson Hillendale First Grade Team A	Pocopson Elementary School	West Chester
20369	LEGO City	Downingtown Area Robotics	Exton
20442	DigiMinds	4-H	West Chester
20478	MYC jrFLL 2	Media Youth Center	Media

FIRST® LEGO® League Teams

Team #	Team Name	Organization	Location
2446	Magnetic Impulse	Springton Lake Middle School	Media
2484	Vespa	Oxford Area High School	Oxford
2485	The Serious Team	Oxford Area High School	Oxford
4548	The Terminators	Downingtown Area Robotics	Exton
4764	Fugett Robotics	J R Fugett Middle School	West Chester
6309	Alternating Current	Episcopal Academy	Newtown Square
10210	Galaxy BOTS	Downingtown Area Robotics	Exton
14491	Experimental Glitches	Springton Lake Middle School	Media
16088	AZTECH	Charles F Patton Middle School	West Chester
17423	The Skyscrapers	Downingtown Area Robotics	Exton
17424	Pink Potatoes	Downingtown Area Robotics	Exton

FIRST® LEGO® League Core Awards

Robot Design Awards

These awards recognize teams that impressed the judges in mechanical design, programming and the team's innovative strategies for completing the missions in the Robot Game.

Robot Performance Award

This award recognizes the team whose robot is able to score the most points pursuing Challenge missions on the competition field.

Project Awards

The judges look for teams whose quality research, innovative solutions, efforts sharing with the community and their presentation best reflect an in-depth understanding of the various scientific disciplines and issues involved with the Project.

Core Values Awards

FIRST® LEGO® League presents these awards to teams that best demonstrate extraordinary enthusiasm, spirit, inspiration, exceptional partnership, and the utmost respect to its own teammates, and in its support and encouragement of fellow teams.

Champion's Award

This award recognizes a team that embodies the FIRST LEGO League experience, by fully embracing our Core Values while achieving excellence and innovation in both the Robot Game and Project.

CITY SHAPERSM Challenge

The 2019-2020 CITY SHAPER Challenge will task more than 310,400 children, ages 9-16* (*ages vary by country), from nearly 100 countries to explore a range of scientific challenge and opportunities within the fields of architecture and urban engineering.

The Innovation Project

For the Innovation Project, each team identified a problem with a building or public space in their community, designed a solution, and shared their solution with others.

The Robot Game

In the Robot Game, teams can earn points if the field shows the following at the end of a 2.5-minute match:

Mission	Scoring Position
Elevated places	Support the robot with the bridge/raise the flags
Crane	Lower the hooked blue unit
Inspection drone	Inspection drone supported by axle on the bridge
Design for wildlife	Support the bat by the branch on the tree
Treehouse	Points for unit independent and supported by trees
Traffic Jam	Lift the traffic jam
Swing	Release the swing
Elevator	Elevator's parts independent and supported
Safety factor	Test building independent and supported by blue beams
Steel construction	Steel structure standing, independent, and supported
Innovative architecture	Team-designed Structure bigger than Blue Building Unit and built only from white LEGO bricks
Design & Build	Location and Height
Sustainability upgrades	Upgrade independent and supported by a stack that is at least partly in any circle
Precision	Number of Precision Tokens left on the field

For the complete CITY SHAPER Challenge details, visit <http://www.firstlegoleague.org/challenge>.

Team #	Team Name	Organization	Location
17820	Robotic Wizardz	Downingtown Area Robotics	Exton
17821	The Capirys	Downingtown Area Robotics	Exton
23352	Silver Wolves	Hillendale Elementary School	Kennett Square
25496	Team Blockheads	Penn's Groves School	Oxford
28772	Baldwin DREAMERS - G.o.Didifi	the Baldwin School	Bryn Mawr
29479	RoboJags	Garnet Valley Middle School	Glen Mills
34328	Baldwin DREAMers - DreamWorx	The Baldwin School	Bryn Mawr
36374	LGES Hying Hippos	Lower Gwynedd Elem School	Ambler
36375	LGES NACHO NERDS	Lower Gwynedd Elem School	Ambler
38403	Penn Wood Elementary	Penn Wood Elementary School	West Chester
39715	Direct Current	Episcopal Academy	Newtown Square
41049	ASTROBOTS	Family/Community	Garnet Valley

Team #	Team Name	Organization	Location
41697	Unique Technics	Family/Community	Garnet Valley
42120	LGES City Otters	Lower Gwynedd Elem School	Ambler
42199	Baldwin DREAMers - Baldwin Brains	The Baldwin School	Bryn Mawr
45010	Operation Innovation	Home School	West Chester
45050	Flying Silver Rock	Family/Community	West Chester
45102	City Constructor	Chadds Ford Elementary School	West Chester
48111	Architech	Owen J. Roberts Middle School	Pottstown

Thanks to Our Volunteers!

It takes a small army of volunteer support to make this tournament a special event for teams. We could not provide this opportunity without their support!

About FIRST®

FIRST® (For Inspiration and Recognition of Science and Technology) was founded in 1989 by inventor Dean Kamen to inspire young people's interest and participation in science and technology. Based in Manchester, N.H., the 501(c)(3) not-for-profit public charity inspires young people to be science and technology leaders, by engaging them in exciting Mentor-based programs that build science, technology, math, and engineering (STEM) skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership.

FIRST provides a progression of four global, after-school programs for K-12: the *FIRST®* Robotics Competition for Grades 9-12 (ages 14 to 18); the *FIRST®* Tech Challenge for Grades 7-12 (ages 12 to 18); the *FIRST®* LEGO® League for Grades 4-8 (ages 9 to 16; ages vary by country); and the *FIRST®* LEGO® League Jr. for Grades K-4 (ages 6 to 10). *FIRST* also operates a research, development, and training facility called *FIRST® Place™* at its headquarters in New Hampshire.

FIRST® Core Values

- **Discovery:** *We explore new skills and ideas.*
- **Innovation:** *We use creativity and persistence to solve problems.*
- **Impact:** *We apply what we learn to improve our world.*
- **Inclusion:** *We respect each other and embrace our differences.*
- **Teamwork:** *We are stronger when we work together.*
- **Fun:** *We enjoy and celebrate what we do!*

