



2019 FIRST® LEGO® LEAGUE HIGH MACH QUALIFIER MANCHESTER, TN

TOURNAMENT MANUAL

Sponsored by:

**Tennessee Society of Professional Engineers, Tullahoma Chapter
Arnold Air Force Educational Outreach, and Jacobs Engineering**

Welcome to the 2019 FIRST[®] LEGO[®] League High Mach Qualifier Tournament

We are happy that you have chosen our tournament. We look forward to meeting your team, watching your robot overcome the challenges this year's challenge and sharing an exciting day with you. We are expecting up to 32 teams and a total attendance of over 400 team members, coaches and spectators.

This manual contains information that will be useful to you as you plan your tournament trip. Please review it carefully to ensure you are fully prepared. If you have any questions, please feel free to contact the tournament director. Contact information is provided in the manual.

Tournament registration is being handled electronically by the FLL team and event registration website. When you register for our event, a confirmation email is sent to you. If there are less than 32 teams registered for the High Mach Qualifier, all teams will be accepted. If there are more than 32 teams registered for High Mach Qualifier, some teams will be asked to change venues to one of the other qualifiers.

Also posted on our webpage and enclosed with this manual is a Release and Consent Form. A copy of this form must be submitted for each team member, coach, and mentor.

Again, welcome to the East Tennessee Championship Tournament, High Mach Qualifier and best wishes for an exciting and successful FIRST LEGO League experience.

Brian Coate
Qualifier Tournament Director

Harry Clark
Judge Advisor

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2019 FIRST LEGO League High Mach Qualifier Tournament

SPONSORS

The FIRST LEGO League Tennessee High Mach Qualifier is jointly sponsored by Tennessee Society of Professional Engineers, Tullahoma Chapter, Jacobs Technology Inc., and Arnold Air Force Base Educational Outreach. All sponsors support the development and strengthening of mathematics and science education and have long histories of working with K-12 education programs that utilize hands-on engaged learning activities for students, such as FIRST LEGO League.

TSPE is a professional association with about 1000 individual members including professional (licensed) engineers, engineering associates, engineering interns, and engineering students. TSPE members represent all technical disciplines and all practice areas including construction, education, industry, government, and private practice. Its mission is to promote and defend the practice of Engineering. One of 7 chapters throughout Tennessee, the Tullahoma Chapter has been participating in the FIRST LEGO League program for about 7 years.

Arnold Engineering Development Complex has test facilities ranging from large wind tunnels and altitude jet and rocket test cells to space chambers, ballistic ranges, arc heaters (to simulate the high temperature generated reentering the Earth's atmosphere) to small research test cells. The center's unique test facilities simulate flight from sea level to space and from subsonic to hypersonic speeds approaching Mach 20. AEDC's STEM program has been very active in LEGO League, with a mission is to inspire and develop student interest in STEM careers, especially in communities that surround military bases, laboratories, and other Department of Defense facilities.

TOURNAMENT CONTACTS

Brian D. Coate, P.E., Qualifier Director
Tullahoma Utilities Authority
901 S Jackson Street
Tullahoma, TN 37388

Office Phone: (931) 571-7108
Cellular Phone: (931) 247-0705
Email: bcoate@tub.net

Harry Clark, Judge Advisor
Arnold Engineering Development Complex
100 Kindle Drive
Arnold AFB, TN 37389

Office Phone: (931) 454-4495
Cellular Phone: (931) 247-4347
Email: harry.clark.4@us.af.mil

TOURNAMENT DATE AND SCHEDULE

Saturday, December 14, 2019

NOTE: All times shown are in Central Time. The starting time for team setup and the opening ceremony are fixed. All other times are subject to change and depend upon the total number of participating teams. A final schedule will be provided on tournament day to each team coach.

7:30 AM	Check-in, Team Setup, Practice
8:30 AM	Mandatory Coaches Only Meeting
9:00 AM	Opening Ceremony
9:30 AM	First Round Competition Begins
11:00 AM	Break
11:15 AM	Second Round Competition Begins
12:30 PM	Lunch Break
1:00 PM	Third Round Competition Begins
3:00 PM	Infotainment and Jr. FLL Awards
4:00 PM	Awards Ceremony
4:30 PM	Tournament Ends

LOCATION AND DIRECTIONS

Coffee County Middle School
Main Gym
3063 Woodbury Hwy,
Manchester, TN 37355

Travel to Manchester, TN via I-24, exit 110, make sure you are on Highway 53 heading North. Coffee County Middle School is located 2 miles North of the 110 interchange. The gym entrance is on the east side of the building facing Highway 53.

WINTER WEATHER SITUATIONS

Weather conditions forecasted for tournament day will be monitored by the event organizers. If severe winter weather conditions are forecasted for the scheduled tournament day, teams may call 931-571-7108 to hear a recorded message about the status of the tournament. Any decision to cancel the tournament will be made no later than 8:00 PM (Central Time) on the Friday before the tournament.

PARKING

There should be ample parking to the west of the gym.

HOTEL INFORMATION

For the convenience of teams that may be staying overnight, a list of local hotels is provided in the Appendix.

TOURNAMENT DAY CHECK-IN

The Gymnasium will be open at 7:30 AM on Tournament Day. Coaches should report to the registration table and teams should proceed directly to the pit area. The registration table will be located just inside the entrance from the parking lot. Nametags, a final schedule, lunch tickets, pit assignments, and other information will be issued. To avoid congestion at the entrance, volunteers will be stationed near the entrance to direct teams to their pit locations.

TEAM SIZE

Teams are limited to a maximum of ten (10) members, excluding coaches and mentors. Teams are expected to observe this limit so we can avoid overcrowding in the pits and lunch area.

ADULT SUPERVISION REQUIREMENT

All teams must be accompanied at all times by at least one adult coach or assistant coach, and the coach must remain at the tournament site throughout the day. Unsupervised teams will not be allowed to compete.

EMERGENCY CONTACT ON TOURNAMENT DAY

In the event of an emergency, team members may be contacted by calling the volunteer coordinator at (931) 580-0166, who will then contact the tournament director and locate the team member. This should only be used in an *emergency*.

SECURITY OF TEAM EQUIPMENT AND PERSONAL ITEMS

The sponsors cannot accept liability for lost or damaged items. Please make sure that someone on your team monitors your team equipment and personal items.

PIT AREAS AND PRACTICE TABLES

Pit areas will be located in the cafeteria area adjacent to the entrance. Each team will be assigned a pit table (30" x 48") and an electrical outlet. Each team pit table will be marked with a placard identifying the team number and nickname. To facilitate locating teams by event volunteers and judges, teams should occupy the pit tables that are assigned and should not relocate themselves during the check-in process. Practice tables, identical to the competition tables, will be available throughout the day. Volunteer "Pit Bosses" will be stationed in the pit area and at the practice tables to provide assistance and manage access. Practice time will be limited to five minutes when other teams are waiting. Only team members, coaches and tournament officials will be allowed in the pit and practice table areas. However, the pit and practice table areas will be arranged such that spectators can observe the activities.

Teams from the same organization will not perform together. To facilitate this, teams from the same organization will be physically separated in the pit area. If teams must share equipment, such as a computer or a video projector, it's important to communicate this as early as possible to tournament organizers.

TEAM BANNERS, POSTERS, AND STICKERS

Teams are encouraged to bring a team banner or poster to mount on the wall in the pit area only. This is an excellent way to display team spirit and identify your team for the judges and spectators. Unfortunately space may not permit teams from displaying their material. **No posters, flyers, or signs should be posted outside of the pit area by any team. As a result of facility damage at previous tournaments, stickers are prohibited.**

TOURNAMENT SCHEDULE OF EVENTS

A final schedule of tournament events will be provided to each team coach during check-in. See the appendix for an example schedule. Times on the schedule are approximate. During the tournament each team will participate in three (3) Robot Performance rounds and participate in three judged events: Research Project Presentation, Robot Design Presentation, and Core Values Presentation. To accomplish all this, the event is scheduled in the following way:

ROBOT PERFORMANCE ROUNDS

The Robot Performance area is located on the main basketball floor of the main gymnasium. There will be two pairs of tables set back-to-back; a total of four tables. These tables are labeled A, B, C, and D. Two teams will perform at the same time.

Teams will be participating in the performance rounds according to their pit position. Teams **MUST** plan to report to the on-deck area five minutes prior to the start time.

When the referees signal that everything is ready, the teams will be escorted to the competition tables and given approximately one minute to prepare and place their robots. At the end of the setup period, the referees will start the 2½-minute competition period. At the end of the competition period, the referees will determine scores and tell the teams when to retrieve their robots and exit the competition area. Only two team members may stay at the table while the robot is attempting a mission. Other team members must remain behind a line on the floor. If a team is not prepared to compete at their assigned time, they will forfeit that round. A team's best score out of the three competition rounds will be used for performance award determinations.

Performance rounds will be conducted in accordance with the rules and standards published in the FLL Team Manual, including any changes and modifications that have been posted on the Official FIRST® LEGO® League web site.

TEAM RESEARCH PROJECT PRESENTATION

Team research presentations will be held in an informal setting with only team members, team coach, parents and judges present. Each team will have five minutes to setup and deliver their presentation, and five additional minutes discuss their research with the judges. Presentations should not be longer than four to five minutes to allow plenty of time for discussion with the judges. Posters and other visual aids may also be used. A copy of the judge's evaluation sheet is attached.

Note: Video presentations are discouraged due to the excessive setup time required. If a team wants to use video presentation materials, such as PowerPoint, they must provide the computer, projector, cart, and extension cord. No additional setup time will be allowed.

ROBOT DESIGN PRESENTATION AND CORE VALUES PRESENTATION

As with the project presentations, the technical and core values presentations are team members, coach, parents and judges only. Teams **MUST** pay close attention to the schedule and be at their assigned room 5 minutes in advance.

Teams must bring their robot, with all mission attachments, and a printed copy of their RCX, NXT or EV3 programs to the Robot Design Presentation. Teams should seek out the programming judge and give their printed programs to the judge. The technical interview provides an opportunity for each team to meet with technical judges, demonstrate their robot, and discuss its design. A maximum of ten minutes will be allowed for each team. A copy of the judge's evaluation sheet is attached.

JUDGES AND REFEREES

We have assembled an impressive team of judges and referees for the tournament, including engineers and scientists, emergency management personnel and community leaders. Our judges and referees bring valuable experience with them and they are looking forward to meeting the teams, hearing team research presentations, and watching robots perform. Each team should be prepared to share their experiences with the judges and discuss the design of their robot. The referees are looking forward to providing teams with the best possible opportunity to demonstrate their robots during the competition rounds. Please give the judges and referees your complete attention and cooperation. Also, please keep in mind that the **decisions of the referees are final and there are no provisions for protest or appeal.**

ALLOWABLE PARTS AND SOFTWARE

At any time during the tournament, the judges and referees may inspect robots to determine if they comply with the allowable parts and software rules as stated on the Official FLL website. If you have a question as to whether a part or construction method is allowed, please visit the FAQ section of the FLL website and post your question in advance of the tournament.

AWARDS

Each team member will receive a FIRST LEGO League qualifier event pin for participating in the program. In addition, the following team awards will be presented at the qualifier tournament.

- Champion's Award (1st, 2nd, 3rd)
- Robot Performance Award (1st, 2nd, 3rd)
- Robot Design Awards (1st, 2nd, 3rd)
- Core Values Awards(1st, 2nd, 3rd)
- Research Project Awards (1st, 2nd, 3rd)

Awards will be distributed as equitably as possible among the teams. A team can only win two awards if one of the awards they win is for Robot Performance.

LUNCH

TSPE will be providing lunch for the teams and coaches. At registration, each team will be given lunch tokens for all registered team members and coaches. Additional tokens will be available to purchase by friends and family members for \$5 each.

Lunch will consist of 2 pieces of pizza (pepperoni or cheese), a drink and a dessert.

In addition to the lunch provided, there are numerous eating establishments located along Jackson Street both north and south of the high school.

ACCOMMODATIONS FOR PERSONS WITH SPECIAL NEEDS

Please contact the tournament director as soon as possible if anyone attending the tournament with your team requires special accommodations. Our facility is currently not fully accessible to wheelchairs. However, if you will inform us of your specific needs, we will work with you to engineer solutions to these challenges and provide the best possible experience for all who attend.

REQUIREMENT FOR RELEASE AND CONSENT FORMS

In the appendix of this manual is a Release and Consent Form. A copy of this form must be submitted for each team member, coach, and mentor. These forms must be mailed no later than November 10th. This is a FIRST policy. Teams that do not submit forms will not be allowed to participate in the tournament.

SAFETY AND SECURITY

Child safety is paramount to all of us involved with young people. Due to the age of the participants in the FLL program, you, the parents and guardians, are essential to their safety. Please educate your child about how to recognize situations that may put them at risk, as well as what things they can do to protect themselves such as always having a companion.

We know you take measures to ensure that you are comfortable with the adults working with your child's FLL team. Beyond the FLL team meeting environment, where you interact with the adult volunteer(s) over a long period of time and can make these judgments directly, there are FLL events with volunteers interacting with your child for one day. In this case it is essential that you educate your child about basic safety practices. For example: the importance of staying with their team or at least in pairs at all times and not leaving the venue except with you, their parent/guardian, or perhaps the team's coach or mentor, if agreed to by their parent/guardian.

DUE TO LIABILITY RESTRICTIONS, SKATE SHOES ARE PROHIBITED AT THIS EVENT.

LIST OF HOTELS IN MANCHESTER

Comfort Suites
152 Hospitality Blvd
Manchester, TN 37355
(931) 728-1301

Quality Inn
2314 Hillsboro Blvd
Manchester, TN 37355
(931) 728-0800

Holiday Inn
111 Hospitality Blvd
Manchester, TN 37355
(931) 728-9383

SAMPLE EVENT SCHEDULE (final schedule provided at registration)

8:30 AM REGISTRATION OPENS																							
9:00 AM OPENING CEREMONY																							
ROBOT PERFORMANCES						RESEARCH PROJECT*						ROBOT DESIGN						CORE VALUES					
Time		Gym				Time		Location A			Time		Location B			Time		Location C					
START	END	Table A	Table B	Table C	Table D	START	END	Project Room 1	Project Room 2	Project Room 3	START	END	Robot Room 4	Robot Room 5	Robot Room 6	START	END	Core Room 7	Core Room 8	Core Room 9			
9:30 AM	9:35 AM	1	2			9:30 AM	9:45 AM	19	20	21	9:30 AM	9:45 AM	13	14	15	9:30 AM	9:45 AM	16	17	18			
9:35 AM	9:40 AM			3	4																		
9:40 AM	9:45 AM	5	6																				
9:45 AM	9:50 AM			7	8																		
9:50 AM	9:55 AM	9	10			9:45 AM	10:00 AM		31	32	9:45 AM	10:00 AM	22	23	24	9:45 AM	10:00 AM	25	26	27			
9:55 AM	10:00 AM			11	12																		
10:00 AM	10:05 AM	13	14			10:00 AM	10:15 AM	1	2	3	10:00 AM	10:15 AM	4	5	6	10:00 AM	10:15 AM	28	29	30			
10:05 AM	10:10 AM			15	16																		
10:10 AM	10:15 AM	17	18																				
10:15 AM	10:20 AM			19	20																		
10:20 AM	10:25 AM	21	22			10:15 AM	10:30 AM	10	11	12	10:15 AM	10:30 AM		31	32	10:15 AM	10:30 AM	7	8	9			
10:25 AM	10:30 AM			23	24																		
10:30 AM	10:35 AM	25	26																				
10:35 AM	10:40 AM			27	28	10:30 AM	10:45 AM				10:30 AM	10:45 AM				10:30 AM	10:45 AM						
10:40 AM	10:45 AM	29	30																				
10:45 AM	10:50 AM			31	32																		
10:50 AM	10:55 AM	Break				10:45 AM	11:00 AM	22	23	24	10:45 AM	11:00 AM	19	20	21	10:45 AM	11:00 AM	13	14	15			
10:55 AM	11:00 AM																						
11:00 AM	11:05 AM	7	8			11:00 AM	11:15 AM	25	26	27	11:00 AM	11:15 AM	16	17	18	11:00 AM	11:15 AM						
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11:30 AM	11:35 AM	16	17																				
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11:40 AM	11:45 AM	23	24																				
11:45 AM	11:50 AM			21	22																		
11:50 AM	11:55 AM	24	25			11:45 AM	12:00 PM	7	8	9	11:45 AM	12:00 PM				11:45 AM	12:00 PM	1	2	3			
11:55 AM	12:00 PM			22	23																		
12:00 PM	12:05 PM	31	32			12:00 PM	12:15 PM				12:00 PM	12:15 PM	10	11	12	12:00 PM	12:15 PM						
12:05 PM	12:10 PM			29	30																		
12:10 PM	12:15 PM	32	33			12:15 PM	12:30 PM	16	17	18	12:15 PM	12:30 PM	7	8	9	12:15 PM	12:30 PM	19	20	21			
12:15 PM	12:20 PM			30	31																		
12:20 PM	12:25 PM	12:20 PM - 1:30 PM LUNCH BREAK				12:15 PM	12:30 PM	16	17	18	12:15 PM	12:30 PM	7	8	9	12:15 PM	12:30 PM	19	20	21			
12:25 PM	12:30 PM																						
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1:10 PM	1:15 PM					1:00 - 2:00 Initial Deliberations																	
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1:45 PM	1:50 PM			20	21																		
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2:05 PM	2:10 PM			28	29																		
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2:20 PM	2:25 PM	2	3																				
2:25 PM	2:30 PM			4	5																		
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2:35 PM	2:40 PM			9	10																		
2:40 PM	2:45 PM	10	11																				
2:45 PM	2:50 PM			12	13																		
2:50 PM	2:55 PM	2:50 PM-3:30 PM ENTERTAINMENT																					
2:55 PM	3:00 PM																						
3:00 PM	3:05 PM																						
3:05 PM	3:10 PM																						
3:10 PM	3:15 PM																						
3:15 PM	3:20 PM	3:00 - 3:30 Final Awards Determination																					
3:20 PM	3:25 PM																						
3:25 PM	3:30 PM																						
3:30 PM - 4:00 PM FLL AWARDS CEREMONY																							

The instructions for using the current paper version of the FIRST Release and Consent form can be found at:
https://www.firstinspires.org/sites/default/files/uploads/resource_library/first-youth-team-member-paperwork-2016-2017.pdf