2016-17 FIRST® LEGO® League
West Tennessee FLL Championship

Welcome to the West Tennessee Championship Tournament and best wishes for an exciting and successful FIRST LEGO League experience.

Frank A. Niedzwiedz	Thomas (Tom) Banning	Daniel Kohn
Tournament Director	FLL Partner	FLL Partner

The FIRST LEGO League Tennessee Championship Tournament is jointly organized by The Herff College of Engineering, of the University of Memphis, and the Memphis Branch of the TSPE (Tennessee Society of Professional Engineers). Both organizations support the development and strengthening of mathematics & 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.

In FIRST® LEGO® League (FLL®), 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.

All information about FIRST® can be found at: http://memphisfirstteams.org/

All questions can be sent to memphisfirstteams@gmail.org

Tournament Schedule

NOTE: All times shown are Central Time. The opening ceremony time is fixed. All other times are subject to change and depend upon the total number of participating teams.

8:00 AM	Check-in, Team Setup, Practice (Ballroom 320A,B,C)
9:15 AM	Opening Ceremony (Ballroom 320A,B,C)
9:45 AM	Robot Competition Round 1 Begins (Ballroom 320A,B,C)
11:00 AM	Robot Competition Round 2 Begins
12:15 PM	Jr. FLL Awards Ceremony (Ballroom 320 A,B,C)
12:30 PM	Lunch Break
1:30 PM	Robot Competition Round 3 Begins (Ballroom 320A,B,C)
2:30 PM	Infotainment (Ballroom 320A,B,C)
4:00 PM	FLL Awards Ceremony (Ballroom 320A,B,C)
5:00 PM	Tournament Ends

Note: Parents & visitors are welcome to observe all activities in the ballroom but are not allowed into the separate Judging areas.

Thank You FLL West TN Sponsors!

Solve problems in:

The Robot Game

- ***Read*** *the Robot Game Rules in the Challenge Guide: http://firstlegoleague.org/challenge#animal-allies*
- ***Identify*** *one or more missions to solve*
- ***Design*** *a robot using LEGO® MINDSTORMS® that can solve the mission(s)*

– Mission results must be visible exactly as described at the end of the match (unless otherwise specified).

Do we need animals, or do they need us? Answer: YES! This Robot Game showcases just a fraction of our wonderful story with animals. As you work on the Missions, pay attention to the many ways innovation and technology have enabled humans and animals to exchange learning, friendship, help, daily needs, protection, amusement, and love… As you'll see, there are many fun problems left to solve!

M01 - SHARK SHIPMENT

- **Visible at the end of the match:**
  – Tank and Shark are completely in Target 1: 7 Points, **OR** Target 2: 10 Points
- **Bonus** (Added only if a Target score is earned): Shark is touching only the tank floor and no wall: 20 Points
- **More:** After Launch for this Mission, nothing is ever allowed to touch the Shark except the Tank.

M02 – SERVICE DOG ACTION

- **Visible at the end of the match:**
  – The Warning Fence is down: 15 Points
- **More:** The Fence must be down because the Robot completely crossed it from the west, after traveling between the Barriers: Y/N

M03 – ANIMAL CONSERVATION

- **Before the match starts:** Hand-place your choice of **one** animal in your tray of the Animal Conservation Mission Model. The placement must match one of these options*:
  – Reindeer facing west
  – Gorilla facing south
  – Bat facing south
  – Flamingo facing east
  – Frogs facing south & west
  – If placing another animal other than Reindeer, put Reindeer on that animal's mark facing west
- **During the Match:** Participating Robots make the trays switch places. A switch is officially successful when the red axle causes the system to stop. Robots then have the option of removing the received animal and replacing it with a different animal for switching. The Referee resets the red axle.
- **Visible at the end of the match:**
  – Two identical animals are completely on the same **Side: 20 Points **per pair**
  – Both teams get points for **all** pairs
- **More:** Each pair must be created through rotation of the Animal Conservation Mission Model: Y/N

***** The five optional animals listed in this mission are the only ones allowed for exchange.
** For M03, a "Side" is anywhere completely south of the symmetric line between Fields, including that Field's Storage areas.

M04 – FEEDING

- **Visible at the end of the match:**
  – A piece of Food is completely in a Target Area: 10 Points (Each Piece)
- **More:** If multiple pieces of Food are in one area, all must match each other: Y/N

M05 - BIOMIMICRY

- **Visible at the end of the match:**
  The Biomimicry Wall completely supports:
  – All the weight of the White Gecko: 15 Points
  – All the weight of the Robot: 32 Points
- **More:** For an object to score, no part of it may be in contact with anything but the Biomimicry Wall and/or Green Gecko, except two scoring objects may be in contact with each other: Y/N

M06 – MILKING AUTOMATION

- **Visible at the end of the match:**
  – Milk **and** Manure have all rolled out: 15 Points
  OR
  – Milk has all rolled out but **not** Manure: 20 Points
- **More:** The Robot's only movement of the Milk and/or Manure came by moving the red lever: Y/N

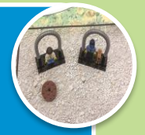
M07 – PANDA RELEASE

- **Visible at the end of the match:**
  – The slider looks fully open clockwise: 10 Points

M08 – CAMERA RECOVERY

- **Visible at the end of the match:**
  – The Camera is completely in Base: 15 Points

M09 – TRAINING AND RESEARCH



- **Visible at the end of the match:**
  – The Dog & Trainer are completely in the Training & Research Area: 12 Points
  – The Zoologist is completely in the Training & Research Area: 15 Points
  – Manure *Samples are completely in the Training & Research Area: 5 Points Each
- **More:** Only one Manure Sample may be Transported at a time: Y/N

***** Only disc-shaped Manure counts as Samples.

M10 – BEEKEEPING

- **Visible at the end of the match:**
  – The Bee is on the Beehive and there is no Honey in the Beehive: 12 Points
  OR
  – The Bee is on the Beehive and the Honey is completely in Base: 15 Points

M11 – PROSTHESIS

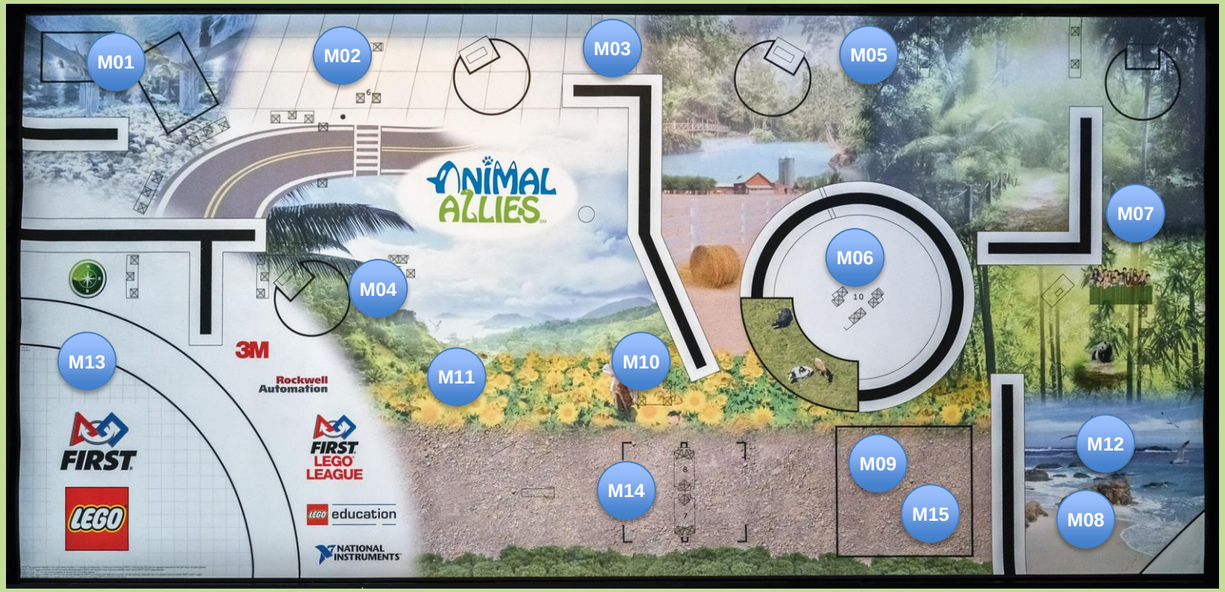
- **Visible at the end of the match:**
  - The Prosthesis is fitted to the Pet AND not held by the Referee: 9 Points
  OR
  - The Prosthesis is fitted to the Pet AND the Pet is completely in its Farm Target: 15 Points

M12 – SEAL IN BASE

- **Visible at the end of the match:**
  - The Seal is completely in Base and not broken: 1 Point

M13 – MILK IN BASE

- **Visible at the end of the match:**
  - All three Milk are completely in Base: 1 Point



M14 – MILK ON RAMP

- **Visible at the end of the match:**
- **Option 1:** 2 Points
  – All three Milk are completely supported by the Ramp
- **Option 2:** 3 Points
  – All of Option 1 (above),
  – AND they're the only things supported by the Ramp,
  – AND they're the only things touching the Ramp
- **Option 3:** 4 Points
  – All of Options 1 & 2 (above),
  – AND they're all standing

M15 – ALL SAMPLES

- **Visible at the end of the match:**
  – All twelve Manure Samples are completely in the Training And Research Area: 5 Points Added to M09 penalties, worth Minus 6 Points Each.

PENALTIES: Before the match starts, the Referee removes five Manure Samples from Base, and holds onto them, leaving five still there. If you Interrupt the Robot, the Referee places one of the removed Samples in the white triangle, in the southeast, as a permanent/ untouchable Interruption Penalty. You can get up to five such penalties, worth Minus 6 Points Each.

The Robot Game Missions can provide real-world examples for your Project research. Learn about the stories behind the Missions in the Challenge Guide: http://firstlegoleague.org/challenge#animal-allies